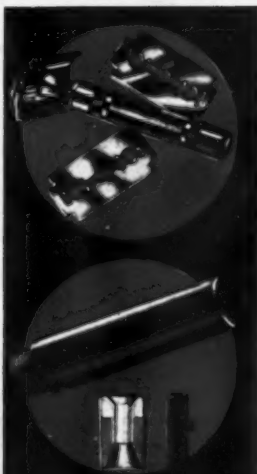


HITCHCOCK'S *Machine Tools* BLUE BOOK

FOUNDED

SEPTEMBER 1937

19



REPLACE -

These pads
when worn as you
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You wouldn't throw away
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Then why use old-type
solid, breakable and
costly feed fingers on
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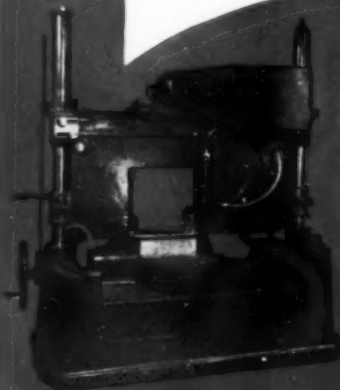
MORRISON MACHINE PRODUCTS, INC. ELMIRA, N. Y.
COLLETS FEED FINGERS PADS FORM TOOLS

FOR
ALL MAKES OF AUTOMATIC AND HAND SCREW MACHINES

PUBLISHED AT 508 SO. DEARBORN ST., CHICAGO



The **MARVEL No. 18 Hack Saw**



**for
Big Work**

**Capacity
18'x18'
Hydraulic
Roll Feed
Universal**

**especially de-
signed for**

**Steel Mills,
Warehouses,
Forge Shops,
Dio Shops,**

**and all other
heavy duty large
size work.**

A Heavy Duty Saw, especially designed for the larger sizes and tougher alloy steels of today and tomorrow. This saw introduces two important features in power saws (1) The roll stroke (a new action similar to the chip-clearing action of a carpenter's hand saw) that ends "dragging" of blade through the cut; and (2) New low pressure hydraulic feed—so simplified that anyone can understand, operate and maintain it. This giant saw sets a new standard and a pattern for the saws of tomorrow.

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DOUBLE-END, END-MILLS WITH

LOOK AT THE CHIPS !

WELDON CUP-POINT

mills are stronger—
eject chips better—
out-perform any
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TWO to ONE

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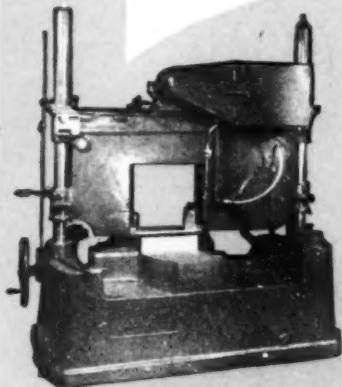
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21 FRANKFORT AVE., CLEVELAND, O.

*Pioneers in Fast Spiral
Double-end, End Mills*

MARVEL

The **MARVEL No. 18 Hack Saw**



**for
Big Work**

**Capacity
18'x18'
Hydraulic
Roll Feed
Universal**

**especially de-
signed for**

**Steel Mills,
Warehouses,
Forge Shops,
Die Shops,**

**and all other
heavy duty large
size work.**

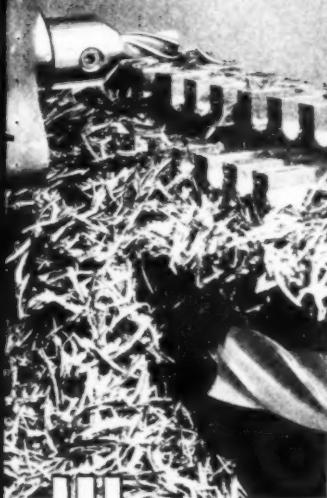
A Heavy Duty Saw, especially designed for the larger sizes and tougher alloy steels of *today* and *tomorrow*. This saw introduces two important features in power saws (1) The roll stroke (a new action similar to the chip-clearing action of a carpenter's hand saw) that ends "dragging" of blade through the cut; and (2) New **low pressure hydraulic feed—so simplified that anyone can understand, operate and maintain it. This giant saw sets a new standard and a pattern for the saws of tomorrow.**

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mills are stronger —
eject chips better —
out-perform any
ordinary style end-
mill TWO to ONE.

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Spring tempered COLLETS

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Scientifically heat treated to a true spring temper, "Rivett Mark" collets resist wear and hold their spring longer than collets of any other make. As standard equipment on all makes of lathes and millers, (see Rivett Bulletin 100B) they may be ordered for immediate delivery from the following stocks —

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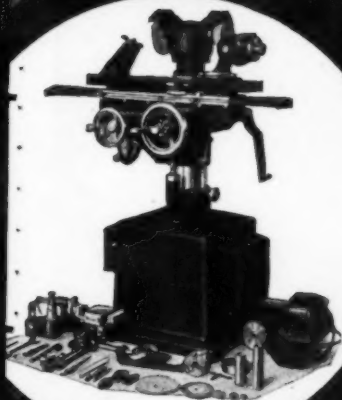


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For Accurate and Economical Grinding

The Grand Rapids No. 12 Universal Grinder is designed and built to meet the demand for a high grade machine of medium capacity to sell at a moderate price. Convenient operation received first consideration. These machines may be operated from either front or rear. Transverse, vertical and longitudinal movement can be made from either position by hand wheel or lever.

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Precision BENCH MILLING MACHINES



HORIZONTAL
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Hardinge preloaded ball bearing spindle Bench Milling Machines meet the exacting requirements of the International Business Machines Corp., and many other leading Industrial Companies for

**ACCURACY
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These machines are companions to our precision bench lathes and hand screw machines at the Inter-

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Precision Machine Tools Since 1890

HARDINGE *Cataract*



Rapid, accurate finishing of gear assemblies.

**PRECISION BENCH LATHES &
BENCH HAND SCREW MACHINES**

AT:



Battery in One of the Special Production Departments.

A STATEMENT FROM THE INTERNATIONAL BUSINESS MACHINES CORPORATION:

"These new type preloaded ball bearing Bench Lathes manufactured by Hardinge Brothers, Inc., Elmira, New York, are very satisfactory, and through their use we have been able to increase our production and decrease our costs."

A. H. HANCOCK
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Special precision work.

Use Quickmail Coupon No. 3 in sending for Bulletin BB on these new lathes.



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RIGHT**AND****L**
LEFT**Turn**

Savings Start At Once . . .

The R & L Turning Tool starts saving money for you even before you commence using it—for its original cost is more than \$200 less than all the separate tools necessary to do the work you can perform with R. & L.

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**R AND L**

Turning Tool

Made in 3 standard sizes — or built to order to conform with your specifications.



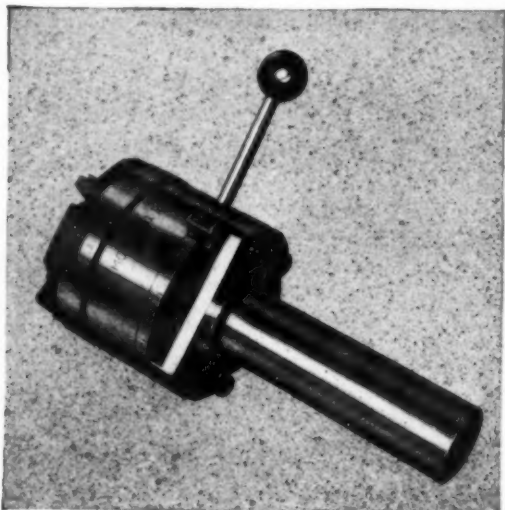
Sturdily made throughout of heat treated, alloy steel, R and L will give long and dependable service. Above R and L is shown center-drilling and turning at the same time with tantalum carbide faced back rest acting as burnisher. Convertible within ten seconds for either right or left turning.

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TODAY FOR YOUR FREE COPY of
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showing the many profitable uses
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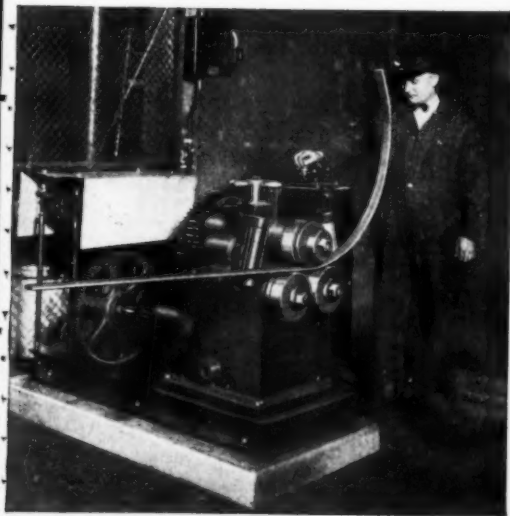
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AIR and HYDRAULIC
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1937

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We illustrate herewith our new style bench type machine for tool and die makers, with universal swiveling mounting. Also right angle hand piece.

TYPE MY4... $\frac{1}{4}$ H. P.



This machine is furnished in two combinations of speeds.

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Haskins Equipment meets all demands... for precision work... for increased production and lowered costs... for portability and flexibility... for ability to "stand-up" under "pressure"... for quality and long life.

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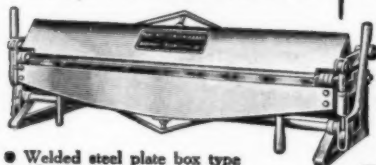
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FLEXIBLE SHAFT EQUIPMENT
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Whitney JENSEN Portable BRAKE

*"Air
Conditioning
Special"*



BENCH TYPE

Two Models

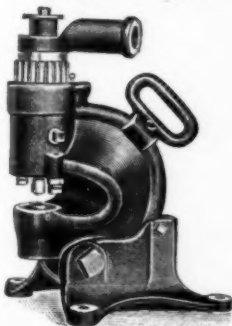
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MODEL ONE

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That enemy of Patent Clutch performance, Centrifugal Force—is actually put to work in Conway Clutches! By pulling out—and holding out—the levers, it aids release and prevents drag.

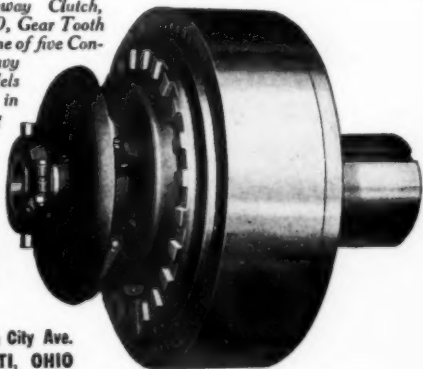
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400-6300	1 to 116	1 3/16" to 4 1/4"	P20
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*The Conway Clutch,
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ROSS Air Control VALVES with POSITIVE SEAL

**NO
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Positive seal assured by full line air pressure. Metal cup washers, in which synthetic, oil resistant rubber has been permanently vulcanized, afford perfect seating, prevent leakage and give long life.

All ports on one face permit multiple mounting in minimum space. Short throw makes Ross valves ideal for mechanical control. For easy, positive action and speed in the operation of your air actuated equipment, install Ross valves.

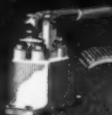
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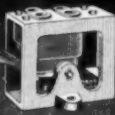
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Detroit, Mich.

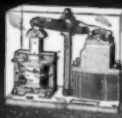
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**MECHANICAL
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Style of Tap—3-flute, cam face

Depth of Tapped Hole—3/16"

R.P.M. of tap "in"—1750

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LOW TOOL COST—LONG TAP LIFE

Production by the old method—70 pieces per hour.

By the Haskins Method—160 pieces per hour.

● No clamps. No hold-downs. No complicated fixtures. Merely a simple revolving post. A tough job made easy by the foot-pedal control and balanced, no-float spindle of the Haskins Tapper. These and other exclusive Haskins features are fully described in our new, illustrated booklet. It will pay you to write for it. R. G. Haskins Company, 4654 West Fulton Street, Chicago.

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IN the manufacture of Putnam Tools only the finest, most durable high speed steel is used. Machining operations are ALWAYS held to uniform precision limits. Such methods prohibit bargain prices, but they do assure you of tools that will do the job . . . and do it right! Your production cost records will show the conclusive proof of their exceptional efficiency and economy.

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AN ENTIRELY NEW PRINCIPLE

**1,000 STROKES EACH MINUTE
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No cams, pawls or ratchets.

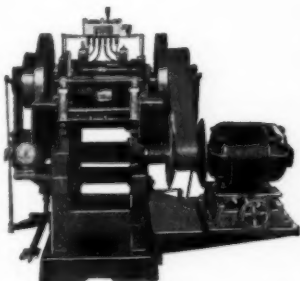
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Its production value has been fully proved.
Send samples of blanks for guaranteed production.

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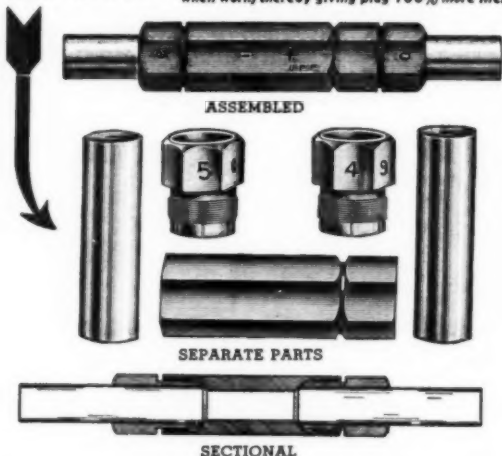
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Gauging members can be turned on opposite ends when worn, thereby giving plug 100% more life.



Precision lapped with the brilliance of a diamond!

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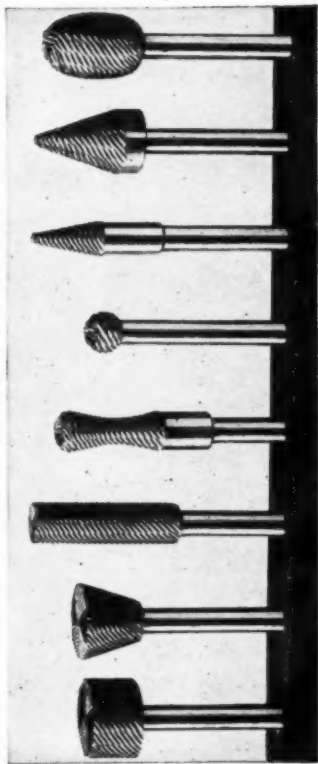
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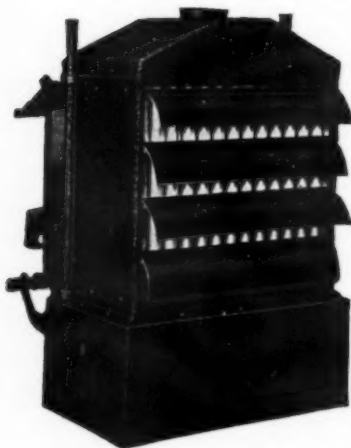
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1855 S. 54th Ave., Cicero P. O., Chicago, Ill.

Chicago

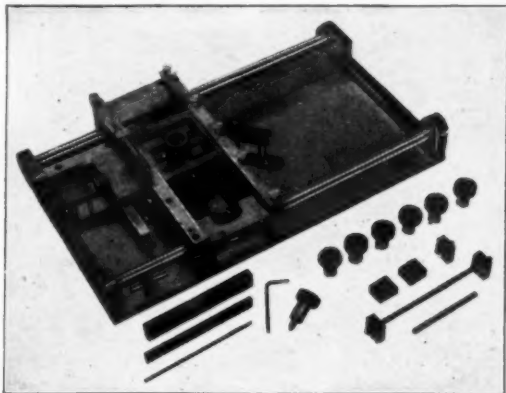
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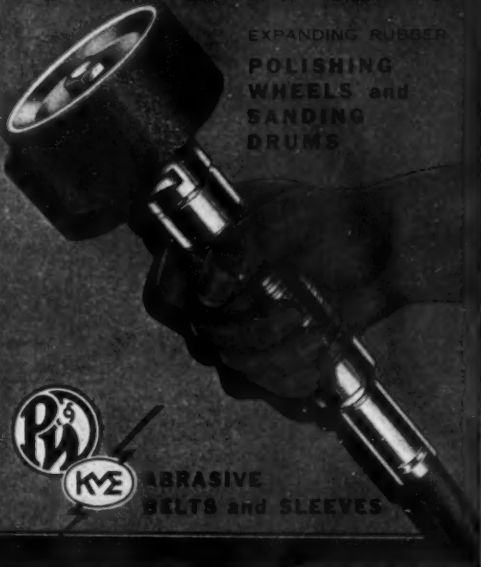
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ABRASIVE
BELTS and SLEEVES

Reduced Prices on Abrasive Belts and Sleeves

Send for this circular and the list of reduced prices on abrasive belts and sleeves.

Quickmail Coupon No. 66 will bring it to you.

PRATT & WHITNEY
Div. N-B-P Co. HARTFORD, CONN.

NOPAK

3 and 4-Way Operating Valves

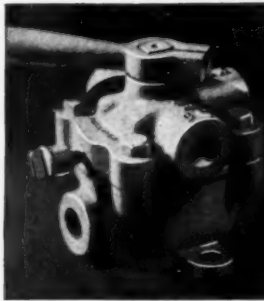
FOR AIR, WATER AND OIL



FOR OIL OR WATER

Sturdy yet simple in construction, NOPAK Operating Valves offer long, efficient operation without maintenance cost, and with absolute freedom from leakage.

The NOPAK flat disc design provides advantageous port spacing, which insures positive, accurate control with both throttling or quick opening action, as desired.



FOR AIR

- * **No Packing**
- * **No Maintenance**
- * **Leakproof**
- * **Protected Disc and Seat**
- * **Quick or throttling action, as desired**

WRITE for Bulletin 65

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Coupon No. 20*

GALLAND-HENNING
MANUFACTURING COMPANY
2753 South 31st Street Milwaukee, Wisconsin

OLIVER of ADRIAN DRILL GRINDERS FOR SMALL DRILLS

**PRECISION BUILT MACHINE TOOLS THAT
GUARANTEE ACCURACY — UNIFORMITY
TROUBLE FREE PERFORMANCE IN ANY
DRILLING DEPARTMENT.**

Recent tests conducted by a large automotive parts manufacturer, resulted in Oliver Ground drills outperforming competition **3 to 1**.

They have since installed a second machine. You can obtain the same results.

We'll gladly grind a few drills for you, without charge, for test purposes.

Four sizes available for drills No. 57 up to 4¼".

Send Quickmail Coupon No. 17 for bulletin giving complete details.



CUT ILLUSTRATES No. 21 MODEL

OLIVER INSTRUMENT COMPANY

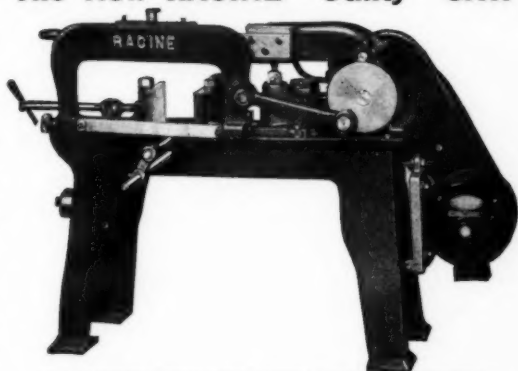
1408 EAST MAUMEE ST.

ADRIAN, MICHIGAN

RACINE

ANNOUNCING

The New RACINE "Utility" SAW



SIMPLIFIED HYDRAULIC FEED—MODERN DESIGN

A machine for the small shop or as auxiliary equipment in the large shop. The price is very moderate. Here is an ideal 6"x6" machine that has everything—

Accuracy in cutting

Freedom from complications

Rapidity in production (1 to 3 square inches per minute)

Modern simple lines

Long blade life

The hydraulic principle, simplified and engineered by pioneers in the application of hydraulics to metal cutting machines.

Send Quickmail Coupon No. 47 for descriptive literature. RACINE dealers everywhere will gladly tell you about this remarkable, new, low priced RACINE machine.

(Also hydraulic feed heavy duty machines,

10x10", 12x12", 10x16" and 13x16" capacities.)

(RACINE Shear Cut, Screw Feed, Production Saws, 6"x6", 8"x9".)

(RACINE Duplex Band Saws, 14"—for Metal-Cutting, Tool Room, Pattern Shops and General Shop Work.)

"STANDARD THE WORLD OVER"

RACINE TOOL & MACHINE COMPANY

1754 STATE STREET

—•—

RACINE, WISCONSIN

POWER SCRAPERS



for Fast, Easy, Accurate, Low Cost Scraping

Leading shops throughout the country are saving many dollars and hours on scraping with dependable, efficient ANDERSON POWER SCRAPERS.

Important features: **PORTABILITY**—can be easily moved about and made ready for use at any light socket. **FLEXIBILITY**—Smooth, steady stroke. Scraper can be adjusted simply and quickly from a fraction of an inch to a $4\frac{1}{2}$ ft. stroke. **EASE OF CONTROL**—Operation of the scraper ram is as natural as using a hand scraping tool. Machine is extremely sensitive and responsive. **BLADE GRINDER**—Conveniently mounted on pedestal enabling operator to constantly keep the blade sharp without leaving the work. **AUTOMATIC SAFETY CONTROL**—shuts off current when motor is unduly overloaded.

Don't hold up production with slow, costly scraping methods. Install ANDERSON POWER SCRAPERS—the modern, efficient, economical scraping method.

Send Quickmail Coupon No. 38 for complete details.

ANDERSON BROTHERS MFG. CO.
ROCKFORD, ILLINOIS

METALMASTER



INSTANT BUTT WELDING of saws and **Dial Control** of Speeds now features of this combination **DOALL** saw and file. Put this new tool to work for you. Write for handbook and full information. *Use Quickmail Coupon No. 65.*



CONTINENTAL MACHINE SPECIALTIES
1301 South Washington Avenue
MINNEAPOLIS MINNESOTA



NOW

Atlas

**has selected VIMCO
General Machine Lights
as Factory Equipment!**

- ★ Increases Efficiency.
- ★ Ends Glare.
- ★ Universal Adj. Mount.
- ★ Attractively Finished.
- ★ 24 Types.

NOW—Atlas has selected Vimco General Machine Lights as Factory Equipment! Because Vimco Lights throw plenty of illumination directly on the work where it is needed and eliminate eye glare by proper deflection. Vimco Lights are designed for, not adapted to lathes and drill presses, by specialists in general machine lighting—and are illustrated in the handsome new Atlas Catalog No. 26. A type for every need—let our experts solve your lighting problems.



**Send Quickmail Coupon No. 79
for information**

Many Important Industrial Users:

Addressograph Multigraph Corp.,
Bosch & Lomb, Challenge Machine Co.,
Dictaphone Corp., Thos. A. Edison,
Inc., Wm. Sellers Co., Yawman &
Erbe Mfg. Co. and many others.

*Vimco Products are manufactured
and fully guaranteed by*



VIMCO MFG., COMPANY, INC.

109 Chenango Street

Buffalo, New York

ACE WELDERS

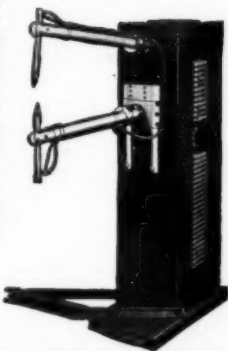
FOR DEPENDABLE PRODUCTION ARC AND SPOT WELDING

ACE SPOT WELDERS adequately provide essentials to efficient, profitable spot welding service. They are designed to serve manufacturers and fabricators of sheet metal and wire goods; machine, sheet metal or repair shops—anyone interested in reducing costs. Spot welding is more economical than using rivets or bolts. Equipped with many labor saving features.

Dependable Spot Welders

in sizes from 5 K W up

Priced as low as **\$90.00**



A.C. ARC WELDERS with the ACE Exclusive Feature— SYNCHRO CONTROL

Portable, general purpose welders adaptable to individual requirements of manufacturers and repair shops, offering numerous advantages over gas welding, soldering and brazing. Performance equal to any well designed D. C. welder when used with a good grade of coated rod. The exclusive Synchro Control feature, covered by pending patents, provides perfect regulation of current and voltage comparable to D. C. welders. Made in sizes up to 250 amperes.

Priced as low as **\$135.00**

Investigate economies possible with ACE Arc or Spot Welders.

Send Coupon No. 15 today for full details and prices.

PIER EQUIPMENT MFG. CO.

WELDING EQUIPMENT DIVISION

626 Cross Street, Benton Harbor, Michigan



Of Course — YOU'RE INTERESTED IN LOWER FINISHING COSTS!

MALL flexible shaft grinders in your plant will greatly reduce finishing costs by enabling your workmen to produce more work quickly and efficiently.

There is a type and size of MALL grinder for your metal finishing job—whether it is grinding, sanding, polishing or buffing.

*Send Quickmail Coupon No. 46 for a copy of our catalog
and let us assist you in selecting the unit
best suited for your work.*

MALL TOOL COMPANY

7742 South Chicago Avenue

Chicago, Illinois

Offices and Distributors in all Principal Cities

MARSCHKE

formerly Van Dorn, Black & Decker



**HEAVY
DUTY**

**GRINDERS
AND
BUFFERS**

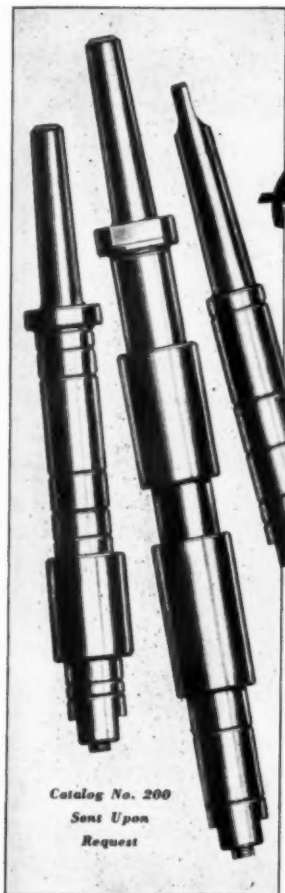
The SELECTIVE SPEED BUFFER with independent spindle drive, as shown in this illustration, is made in three sizes for 5, 7½ and 10 H.P. motors. It is only one of the several types and sizes of MARSCHKE BUFFERS.

The MARSCHKE LINE includes a wide variety of BUFFERS, FLOOR STAND AND SWING FRAME GRINDERS for the different conditions and different requirements of every plant in any industry.

This complete line—formerly made by Van Dorn, Black & Decker—is now being manufactured by

VONNEGUT MOULDER CORP.
1805 Madison Avenue, Indianapolis, Ind.

Send for catalog showing machines with 10" to 30" wheels
and 1 to 25 H. P. motors



*Catalog No. 200
Sent Upon
Request*

MILLING MACHINE

Arbors

●
**FOR ALL MAKES
OF MACHINES**

**SCULLY-
JONES**

Arbors
**REPRESENT
QUALITY**

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**SCULLY-JONES
and
COMPANY**

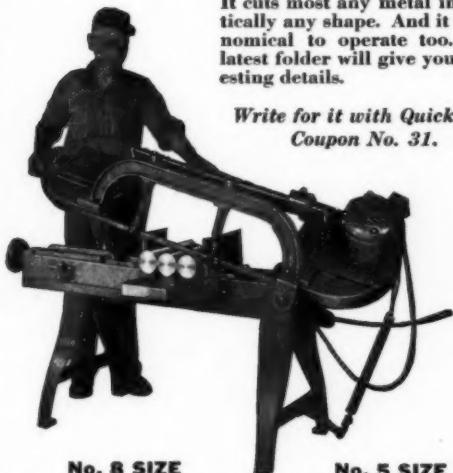
1905 S. Rockwell St.
CHICAGO, ILLINOIS

Send Quickmail Coupon No. 40 for Catalog

Speed

The WELLS METAL CUTTING BAND SAW answers today's demand for faster production. On 1001 special jobs—in the plant or tool room—this versatile, accurate, cutting unit will save many valuable minutes. It cuts most any metal in practically any shape. And it is economical to operate too. Our latest folder will give you interesting details.

*Write for it with Quickmail
Coupon No. 31.*



No. 8 SIZE

8 in. diameter round
or 8 in. by 16 in. flat.

No. 5 SIZE

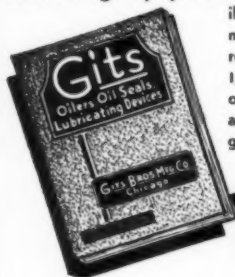
5 in. diameter round
or 5 in. by 10 in. flat.

WELLS MFG. CORP. Three Rivers,
Michigan

42

Announcing OUR NEW GENERAL CATALOG

Your copy of the new GITS
lubricating equipment catalog,



illustrating and describing
many new features, is now
ready for mailing. Over
1,000 styles and sizes of
oil cups, including oil
and grease seals, oil cans,
gauges, etc. are shown.

oil cups

oil and
grease
seals

oil
cans

gauges

*Send Quickmail Coupon No. 80
for your copy.*

GITS BROS. MFG. CO.

1860 S. Kilbourn Ave.

Chicago, Illinois

HITCHCOCK'S *Machine Tool* **BLUE BOOK**

**Selected
Circulation**

**25,000
Monthly**

SEPTEMBER, 1937

THIRTY-SECOND YEAR

A Good Autumn in Sight

The Index of Machine Tool Orders fell to 171.1 during July and the latest reports indicate a somewhat further decline in August. While warm weather decline is traditional in machinery markets, business in many important centers has been gratifying.

Considerable buying is already under way, particularly on the part of the larger corporations, in anticipation of a profitable season ahead, and a more active inquiry forecasts increasing business during the early Fall months.

The Summer slump seems to be about over. Order files are commencing to take on weight and manufacturers of machine tools have every reason to expect a healthy demand for their products this Fall and Winter.

Published By

Hitchcock Publishing Co.

508 S. Dearborn St.,

Chicago, Ill.

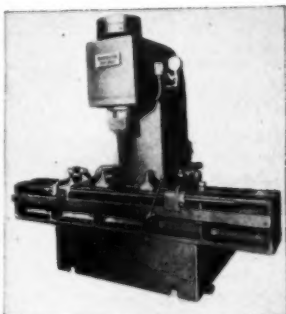
Consult the Classified Finding Index for your requirements

Hannifin Straightening Press

A 35-ton sensitive straightening press especially designed for straightening operations on heavy crankshafts has been developed by the Hannifin Mfg. Co., 621 S. Kolmar Ave., Chicago.

The ram movement is completely controlled by one lever. When moved in either direction the ram will move a proportional distance under full pressure and then stop. The operating valve automatically moves to neutral and the pump idles at zero pressure until another movement of the ram is required. This extremely simple and sensitive control facilitates straightening operations.

The hydraulic power unit is built into the base. The table has special fixtures, including an adjustable carriage which rolls on ball bearing mountings on the hardened rails of the table. Hardened wheels support the carriage and are provided with spring pads. This construction simplifies movement of the crankshafts while being straightened.



Frame, base, reservoir and the box type table are entirely of welded construction which makes for simplicity, strength and lightness.

Capacity is 35 tons. Stroke 6 inches; ram speeds, down 53 inches per minute—up, 77 inches per minute—table to ram (up) 20 inches; floor to table 20 inches; center of ram to face of frame 9 inches; table 90 inches long; overall height 82 inches; base 55½x61 inches. Motor, 10 h.p.

The makers will gladly send you a full description of the press—just send Quickmail Coupon No. 61 to them on your own business letterhead.

DO IT—

Better—Faster—for Less!

with **ODIN UNIVERSAL**

**Precision Vises
Swivel and Plain**

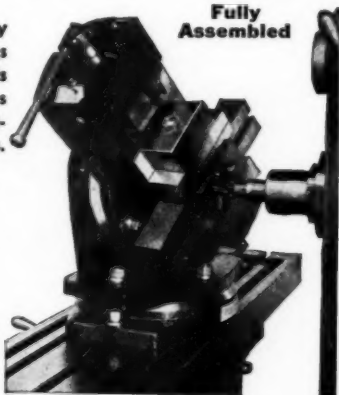
with Interchangeable Jaws and
Hardened and Ground Parallels

They quickly pay
their costs in savings
on High Tool Costs
—Expensive Fixtures
—Patterns and cast-
ings—Extra Set-Ups.

**Fully
Assembled**

Investigate the
money saving
possibilities of
ODIN VISES

Send Quickmail Coupon
No. 71 for full facts
and prices.



Let us show you how to make cheaper and
better jigs and fixtures at a greatly reduced
cost—with a great saving in time.

ODIN UNIVERSAL
CORPORATION

CHICAGO

**Sales Division
110 S. Dearborn St.,**

**Telephone
Franklin 3281**

Linley High Speed Vertical Bench Miller

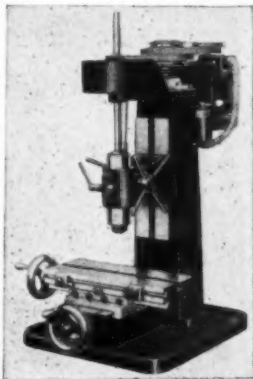
Laying out, drilling, milling and boring operations on dies, jigs, fixtures, molds for plastics, letter cutting, metal pattern work, etc., all come within the scope of this new Linley unit. It is simple and speedy, and the makers assert it is especially useful in releasing larger machines for heavier work. It is said that breakage of small end mills is reduced to a minimum through provision of correct speeds.

Table working surface is $14\frac{1}{2}$ inches long and $5\frac{1}{2}$ inches wide with a $\frac{1}{2}$ inch T-slot through center. Longitudinal travel is 10 inches and cross travel 5 inches. The screws are fitted with replaceable bronze nuts and have large dials graduated in thousandths.

"Litro" ultra-precision preloaded ball bearings carry the spindle and the pulley runs on separate ball bearings. V-belts in a compound drive provide 8 spindle speeds ranging from 275 to 4250 r.p.m. Spindle is machined for collets available in sizes up to and including $\frac{1}{2}$ -inch for straight shank mills. A special collet is furnished for No. 5 B&S taper shank.

Vertical travel of spindle is 3 inches and it can be locked in position for milling operations. Sliding head has a movement of 8 inches and in an upper position allows 11 inches between spindle end and table top. Adjustable motor bracket permits belt take-up and a reversing switch provides for right or left hand mills.

Standard equipment includes a $\frac{1}{3}$ h.p. 1725 r.p.m. ball bearing motor, single phase, 60 cycle, 110 or 220 volt, or three phase, 50 or 60 cycle, 220 volt—reversing switch—belts, one collet of any specified size up to $\frac{1}{2}$ inch capacity and one special collet to take No. 5



(Continued on Page 50)

New! SKILSAW DISC SANDERS

TWO POWERFUL MODELS FOR
HEAVY DUTY AND CONSTANT
PRODUCTION SERVICE



Here are the features

SKILSAW DISC SANDERS

STREAMLINE BODY

— Smooth trim design, perfect balance and light weight make the tool

easier to use. Comfortable grips and handles give complete control under heavy sanding loads.

STRAIGHT-LINE VENTILATION

— Assures a cool-running tool. Ports are located to blow dust away from operator and prevent clogging. Efficient air-filter protects commutator and motor from abrasive dust and dirt.

POWERFUL MOTOR

Ample reserve power to insure long life. Provides for fast sanding and grinding.

SEALED BEARINGS

— Bearings, in all positions, fully sealed as a protection against dust and grease leaks.

BEVEL GEARING

— Starts and quiet in operation.

These two 7 in. SKILSAW Disc Sanders incorporate everything that is new in fine portable tool construction. Compact streamlined design, greater power, more engineering refinements! Compare every feature and you will choose one of these tools for all sanding and grinding now done by costly hand methods. See them at your distributor! Send Coupon No. 16 for catalog.

SKILSAW, INC.

3318 ELSTON AVE.

CHICAGO

217 East 63rd St., New York

12 Broadway, New York

B&S taper shank. Motors having other characteristics can be supplied—also foot treadle equipment for operation of quill travel may be had at an additional charge.

Linley Brothers Co., Bridgeport, Conn., will gladly send you full information if you stick Quickmail Coupon No. 62 on your business letterhead.

The "Chief"—Dumore No. 12

Offered for the purpose of widening the field of precision grinding, the new Dumore No. 12 grinder does larger and heavier work—externally and internally—with stated accuracies of 1/10,000 of an inch.

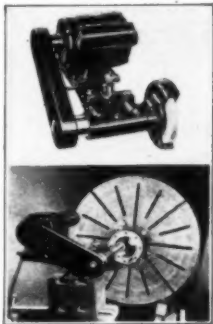
The "Chief" is said to embody all the attractive features of other Dumore tools—with the ability to perform a wider range of work with greater output.

The motor is a 1 h.p. capacitor type and like other Dumore units, is checked and dynamically balanced to eliminate vibration and chatter marks in grinding. The motor was selected by Dumore because of delivering maximum power output for its size, plus constant speed.

Grease-packed split-tolerance ball bearings are used, fully enclosed to exclude dust and dirt from bearings, rotor and stator.

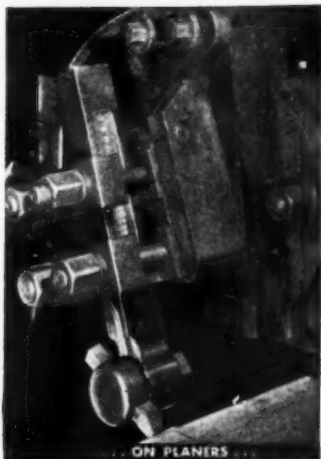
Power is transmitted to the quill by two No. 1 section V-belts. Six sheaves are supplied so that spindle speeds of from 2800 to 8200 r.p.m. are available for delivering correct wheel speeds for wheels 8 to 3 inches in diameter. Six quills are available—one external and five internal. These are for horizontal operation. A special quill is available for vertical operation. For quick centering of the quill a vertical feed screw raises or lowers the housing.

The Dumore Co., Racine, Wis., will gladly send you a bulletin fully describing the new "Chief."



ARMSTRONG

TRADE MARK REG. IN U.S. PAT. OFFICE



ON PLANERS

Behind each
ARMSTRONG
Tool Holder
Stands the
ARMSTRONG
SYSTEM

Alone each ARMSTRONG TOOL HOLDER is equal to a complete set of forged tools for each is a permanent, multi-purpose tool that does innumerable jobs, that can take cutters of many shapes, can be adjusted with a set screw to any clearance. Still, behind each ARMSTRONG TOOL HOLDER stands the complete Armstrong system—Tool Holders of over 100 sizes and shapes—other permanent multi-purpose tools for every operation on lathes, planers, slotters and shapers and for standard operations on Turret Lathes and Screw Machines.

Each is complementary to the others. "Save All Forging, 70% Grinding and 90% High Speed Steel".

To end haphazard tooling methods build your Armstrong System. This can be done without costly "changeover" or confusion—by adding each new ARMSTRONG TOOL HOLDER as needed. Standard whenever metal is machined, ARMSTRONG TOOL HOLDERS are stocked by all leading Mill Supply Houses. They are as available as your telephone.

Send Coupon No. 6 for Catalog



Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U.S.A.

Eastern Warehouse & Sales: 199 Lafayette St., N. Y.
San Francisco, London

Bliss No. 407 Toggle Drawing Press

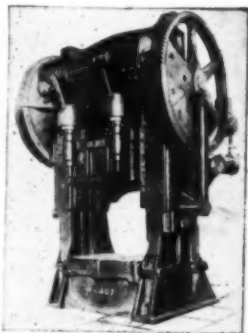
While single-action presses with built-in drawing cushions have become popular for double-action work, it is asserted that there is a definite limit to the range of work which can be accomplished with this type of equipment. In other words, it is pointed out that the use of high blank-holding pressures, particularly with deep draws, involves a decided increase in capacity of the driving train on the press, including motor and flywheel.

The toggle double-action press illustrated is offered as having advantages in positive gripping for stretching jobs with draw beads and in power economy on deep draws. It is said to draw a shell 10 inches in depth giving maximum efficiency in the process. Then also, it can be converted from a double-action into a triple-action press by the addition of Marquette drawing cushions in the bed.

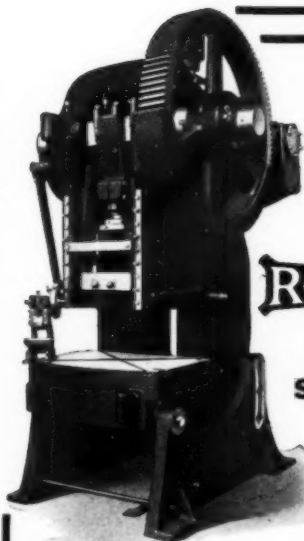
This Bliss No. 407 double-crank, double-action, straight-sided toggle drawing press is a long stroke model. Four separate castings comprise the frame, held together by extra heavy steel tie rods shrunk-in. A 35 h.p. electric motor drives the flywheel through V belts, which in turn drives the double-g geared twin drive train of gears.

Control is completely electric with push buttons to stop, start or "inch" the press, the latter being useful in die setting. The clutch is a new Bliss full automatic, air operated, combined friction clutch and brake with clutch mounted in flywheel. Timken roller bearings carry the flywheel.

Crankshaft and intermediate shaft have renewable bronze bushings while the drive shaft is mounted on renewable Timken roller bearings.



(Continued on Page 54)



Built for
**EXCEPTIONAL
SERVICE**

ROCKFORD

**INCLINABLE
AND
STRAIGHT SIDE
PRESSES**

**in all
sizes**

THE ever increasing use of heavy sheet metal stampings nowadays in place of castings and the numerous parts formerly made on screw machines, requires presses of greater power and capacity, and that's just what you get in the **ROCKFORD**.

Rockford Presses are sturdily built of the best materials and incorporate many features that are the result of years of experience in building presses of various types. You can depend upon a Rockford—for it is designed to maintain exact adjustment throughout long runs and under heavy duty.

Write for Catalog

ROCKFORD IRON WORKS
ROCKFORD, ILLINOIS

The bed is completely arranged for the addition of air cushions, if necessary.

Some of the more important dimensions are:—crankshaft diameter at bearings, 7 inches; at pins, 8 inches; plunger stroke 21 inches; blank-holder stroke 14 inches; shut height bed to blank-holder, stroke down adjustment up, 34 inches; bolster, 6 inches thick.

E. W. Bliss Co., 1420 Hastings Street, Toledo, O., will gladly send you any further information desired.

A New Power Saw by Racine

A simplified low-priced power saw of the dry cut type, employing a simplified hydraulic feed principle, is sponsored by Racine Tool and Machine Co. Intended for smaller shops

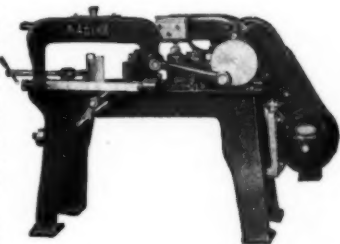
or as an auxiliary unit in large plants, the new machine is said to be entirely modern, embodying labor saving features of more expensive production saws.

Capacity is 6x6 inches. Vise swivels to 45°.

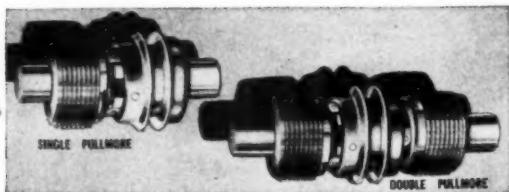
V belt drive is used from motor to drive gears, and two speeds are available. Feed dial gives infinite range of pressures from zero to maximum for cutting all classes of materials including mild and cold rolled steel, alloys, tool steel, high speed and stainless steel. It is stated that 4-inch rounds are cut in 8 minutes and 3-inch rounds in 5 minutes.

Hydraulic system comprises a simple plunger pump, cam operated. Hydraulic pressure is applied to top of feed cylinder through valve with numbered dial for varying the pressure. Entire hydraulic system with valves, cylinder and controls is self-contained in removable cast iron case. Arrangement is very compact with provision for draining oil leakage back to oil reservoir. Three quarts of automotive crank case oil is said to suffice for many months' operation.

Write the manufacturers on your letterhead—they will be glad to send you full information.



PULLMORE CLUTCHES



For reliable, efficient clutch operation and control in machine tools, cranes, industrial trucks, printing, packaging, textile machinery and similar equipment, use Pullmore Clutches. They are rugged, compact, durable, readily

adapted to design requirements. Their symmetrical design and precision machining insure perfect balance, smooth performance at high speeds. Their high-ratio operating levers require slight axial pressure for quick engagement and disengagement.

Pullmore Clutches are available in single and double types, for operation in oil or dry, in capacities from 1 h.p. to 75 h.p. at 500 r.p.m.

Engineers, designers and others responsible for reliable, efficient clutch performance are invited to write for complete information on Pullmore Clutches and details on our free engineering service.

Use Quickmail Coupon No. 53 to get this BOOKLET



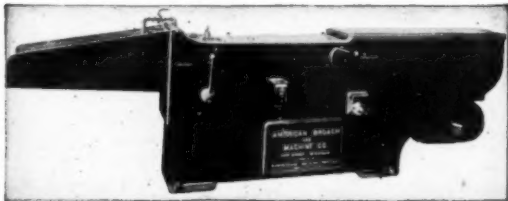
ROCKFORD DRILLING MACHINE DIVISION

Borg - Warner Corporation, 410 Catherine Street, Rockford, Illinois
 Sold by MORSE CHAIN CO., Ithaca, N. Y. With offices in principal cities

American Horizontal Hydraulic Broaching Machines

Offered by the makers for the performance of any internal broaching operation and a variety of surface broaching operations, the Type H American broaching machine is available in five sizes. Intended primarily for continuous production of duplicate parts, it can be easily set up for short runs on different types of work by the substitution of suitable broaches, guide bushings and broach pullers. Work holding fixtures incorporating broach guides are necessary for surface broaching operations.

Infinite variation of cutting speed between maximum and minimum is provided by a conveniently placed lever with graduated dial. At the left of the bed is another lever affording accurate sensitive control of slide movement. This lever is held in a vertical neutral position by a safety detent. Movement either side of vertical results in slide movement in the same direction. "Inching" the slide in either direction during set-up is easy with this accurate sensitive control. Adjustable stop collars provide for stopping slide at end of stroke. Pulling head on slide has vertical adjustment which facilitates set-up and insures accurate straight-line pull.



A standard frame motor is connected to the hydraulic unit by a flexible coupling. Motor is mounted off the floor at rear where it is protected, well ventilated and accessible. The pumping unit is continuously submerged in the hydraulic oil contained in large sealed dirt-proof reservoir in bed. The hydraulic cylinder is solidly secured to the bed under pulling slide. Piston head and stuffing box are specially con-

(Continued on Page 58)

INCREASE PRODUCTION WITH FEDERAL PRESSES



No. 33 BACK GEARED

Capacity 26 tons
Large area ram face
Large bolster plate
Large opening thru back for bulky work

Designed and built especially for large or bulky light work and for progressive dies such as used in lamination.

All models of FEDERAL heavy duty presses are equipped with Timken bearings to increase efficiency and production at the lowest possible upkeep cost. Roller bearings in the flywheel are adjustable for wear, eliminating the need for expensive rebuilding and repairs after long use and preventing damage to the clutch and control mechanism. Non-repeat safety type clutch and tripping device, also standard equipment on FEDERAL models, guard against accidents to operators or dies should momentum carry the crankshaft beyond center.

FEDERAL
PRESS CO.
ELKHART, IND.

Send Coupon No. 68
for illustrated in-
formative circular

structed to afford smooth, free, leakproof operation.

Hardened steel ways are provided for the pulling slide. At each stroke of the slide an automatic pressure lubricator forces oil to each of the ways. The work and broach are supplied with coolant by a centrifugal pump with direct-connected motor drive. Chips and coolant are confined by a heavy steel guard. Chip chute through front of bed conducts chips and coolant to interior compartment where chips fall into receptacle and coolant drains to reservoir. Chips may be removed without interfering with production. Normal capacities of the different models vary from 6 to 20 tons; maximum capacities from 9 to 28 tons. Stroke is 36 inches on the smallest model and maximum broach length 44 inches. On the largest the stroke is 60 inches and maximum broach length 69 inches. Cutting speed on the smallest unit ranges from 10 to 28 feet per minute with a return speed of 44. On the largest model cutting speed is from 17 to 25 feet per minute and the return speed 40.

The makers American Broach & Machine Co., Division of Sundstrand Machine Tool Co., Ann Arbor, Mich., will gladly send you further information.

Ridgid Streamlined Chain Vise

A new streamlined chain vise has recently been placed on the market by the Ridgid Tool Company of Elyria, Ohio, makers of the Ridgid pipe tools. Novel features of this new vise are the pipe rest and pipe bender—also a frame of strong special alloy malleable metal and high quality tool steel no-m-jaws, designed and hardened for firm grip and long wear.

It is asserted that no Ridgid vise gets out of the Design Dept. at the factory unless it shows marked improvements over similar tools and will stand up under extensive testing at the factory and out on the job.

The new vises come in 2, 4, 6 and 8 inch sizes. The makers will send full information on your request, preferably on your business letterhead.





**For All Types
of
Small Work**

**Tried
and
Tested**

Price—

\$100

Less Motor and Stand.

Stand \$15 extra.

The only inclinable
press at this price.

•ROUSSELLE PUNCH PRESS•

A sturdy, dependable, high speed press at an unusually low price—effecting savings which would be impossible with a large press. With automatic feed 10,000 operations per hour are possible. Many attractive features including **non-repeating clutch** (pat. app. for) which stops after each stroke regardless of foot pedal position, unless pin is removed, where-upon it will run continuously so long as pedal is depressed.

Send Coupon No. 21 for complete information.

DAVID J. ROSS CO., BENTON HARBOR,
MICHIGAN

Miller Dual Control Welder

A new welder known as the Dual Control is offered by Miller Electric Mfg. Co., Appleton, Wis. It is said to provide practically unlimited current settings, enabling the operator to select the most desirable voltage for the amperage used on any job. Three plainly marked dials on front of the cabinet afford easy control. Compactly built but heavily constructed for hard usage, the new welders are available in three sizes with a current range from 10 amps. to maximum output, making it possible to handle sheet or heavy metal. Wheels and a handle make the units portable. Cabinet dimensions are the same for the three models and weights vary from 235 to 350 lbs. Standard voltage 220.



Stick Quickmail Coupon No. 28 on your letterhead and sign your name and title to receive complete information.

The Sundstrand Tool Grinder

Suspending the former three-wheel tool grinder, the new Sundstrand unit is offered as an advance in the accurate, fast and economical grinding of cemented carbides and other cutting tools.

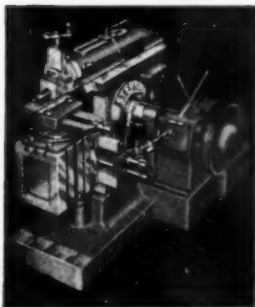
A grain wheel is provided for rough grinding and a diamond-faced wheel for finishing. Tilting of work tables above or below horizontal is indicated on direct reading scales, accomplished in one simple movement and locked securely by quick acting clamps. Accurately graduated fixtures, it is said, establish other angles with equal accuracy, ease and speed.

In rough grinding, a tool is clamped securely in position and passed across the face of the cup-shaped grain wheel by a rocking motion of the table support. It is claimed this distributes wheel wear evenly, pro-

(Continued on Page 62)

POWERFUL MACHINES

for HEAVY WORK

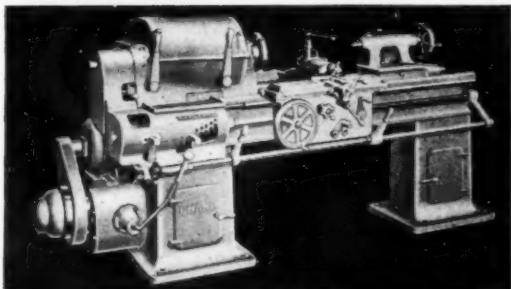


STEPTOE SHAPERS

Force feed continuous lubrication, heavy construction and Timken bearings throughout insure rigidity, accuracy and long life. Centralized controls are within easy reach of the operator at all times.

Instantaneous feed and speed changes may be made with fingertip control while the machine is running.

Send today for catalog No. 130.



CHARD Twelve-Speed All Geared Lathes

Precision Timken or plain bearing spindle—Instantaneous start or stop of spindle—12 speed changes in 15 seconds—Heat treated and hardened gears run in oil in speed box—All shafts mounted on ball bearings—Powerful, accurate, and easy control—Built in 16", 18" and 20" standard engine lathes, manufacturing lathes and tool room lathes. ● *Send today for full information.*

Western Machine Tool Works
HOLLAND, :: :: MICHIGAN

motes clean, cool cutting and maintains surface speed. Tool is advanced against the wheel by a screw feed. Easy manual operation of both movements gives the operator complete sensitive control of the grinding. The fixed position of the tool, the moving mass of the table (or top-rake fixture) and copious supply of coolant provides rapid rough-grinding without damaging the tool. In finish grinding the tool is placed on the table, and against the protractor, the cutting edge is advanced to contact lightly with the fast-cutting diamond faced wheel; then tool and protractor are slid back and forth as a unit under guidance of the groove in the stationary finishing table. It is asserted this gives finger-tip control of the finishing operation and makes it practically impossible to take off too much material in one pass across the face of the wheel.

It will be noted from the illustration that the heavy box-section pedestal provides rigid support for the wheel spindles and work tables and encloses the motor drive.

Two independent heavy spindles of heat treated chrome nickel steel are mounted on the same center line and run in precision anti-friction bearings protected by special oil seals.

A convenient switch stops, starts and reverses driving motor, enabling grinding with wheel running toward the cutting edge of either right-hand or left-hand tools.

Rough grinding table has trunnions in well protected bearings to permit adjustments ranging from 10° above horizontal to 30° below. Position of table is indicated on direct reading scale.

Carriage supporting rough-grinding table forms catch basin for coolant and abrasive; is mounted for oscillation and in-feed on heavy steel bar which is solidly secured.



(Continued on Page 64)

Geneva

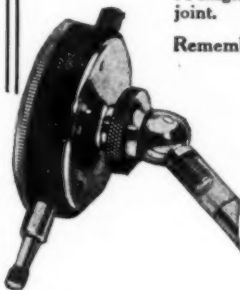
Precision Dial Indicator and Universal Holder



No. 125-F with
adjustable dial
0-50-0 indicat-
ing .001".

Geneva Indicators stand up and remain accurate because of the improved movement in which a sturdy lever arm supplants the usual complicated gear train—and reduces friction and wear to a minimum. Bearings are of long life, low friction type—and stainless steel and bronze alloy parts afford complete rust-proofing.

The Universal Holder speeds up settings with an unbelievably wide range of positions—anything up to 180° on the inner section of the ball joint — and 360° in any position on the 180° arc. A single knurled nut locks the ball joint.



Remember, the Geneva Dial Indicator is a development from forty years experience in our manufacture of precision instruments.

Complete information
to organizations and
dealers upon request.

Chicago Dial Indicator Company
180 N. Wacker Drive, Chicago, Ill.
Dial Indicators • Lens Measures • Depth Gauges

Coolant is supplied to center of finishing wheel and spread by centrifugal force in a constantly-maintained film that enables observation of the grinding process.

Finishing table is hardened and ground; has accurate slot for guiding protractor. Powerful clamp locks table in any position from 10° above horizontal to 30° below horizontal as indicated on direct reading scale.

Large coolant reservoir on rear of column may be removed readily for cleaning without disturbing piping or connections.

A full description of the machine and the work it is intended to perform will be found in an attractive Bulletin which the Sundstrand Machine Tool Co., Rockford, Ill., will gladly send on request. Stick Quickmail Coupon No. 84 on your signed business letterhead to receive your copy.

And Now—Streamlined Tools

The new 7-inch portable electric sander presented by Skilsaw, Inc., reveals the current streamline trend in tool design. The illustration reveals the attractive lines of the new sander, which is said to be unusually light in weight and to be in perfect balance. Tight flush joints were procured by close matching in lieu



of lap joints. The grip handles are styled to afford comfort and complete control to the operator under heavy sanding loads. Motor and commutator are protected against abrasives by a louvre type air filter and straight line ventilation assures a cool running tool, the air emerging at ventilating points which direct it away from the operator.

Skilsaw, Inc., 3318 Elston Ave., Chicago, will gladly send you full information. Coupon No. 16 will speedily bring you the complete catalog.

ADJUSTABLE
While Running!



NEW
Absolutely Different

THE PRECISION UNIVERSAL TOOL HEAD

does the job faster, more accurately and
for less cost, because it is

ADJUSTABLE WHILE RUNNING!

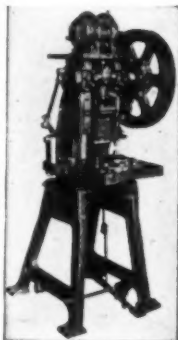
For boring, counterboring, recessing, tre-
panning, undercutting, etc.

For bulletins and additional information,
send Coupon No. 60

THE PRECISION TOOL COMPANY
Bridgeport, Connecticut

Special Toledo Automatic Press

The press illustrated was recently adapted by the Toledo Machine and Tool Co., 1420 Hastings St., Toledo, O., division of E. W. Bliss Co. The job was special, requiring an 8-station dial feed for etching with acid the trademark and number on hardened steel parts. Attached to the slide is a rubber stamp die which is rotated 180° every stroke of the press. The back stamp die comes down touching a pad of acid, then on the next stroke rotates 180° to the front and applies it to the work which has been placed under the die by the dial feed. At the same time that the die with the acid has rotated to the front, the die that was in front rotates 180° to the rear to pick up more acid for the next impression. Thus a piece is etched for every stroke of the press and continuing around the dial, is dropped through a hole in the bolster into a container. The press itself is a Toledo No. $\frac{3}{4}$ open back inclinable, with 1½ inch stroke, 6 inch shut height on the bed and a 1 inch bolster. A ½ h.p. 900 r.p.m. motor is geared directly to the flywheel supplying the motive power. Further information about this or similar jobs and equipment may be obtained by writing the manufacturers.



New Williams' Catalog

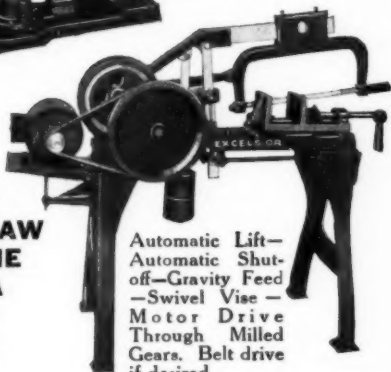
J. H. Williams & Co., 75 Spring St., New York City, have issued a new catalog describing their entire industrial line of drop-forged wrenches and other stock specialties. Included are many additions to their carbon and alloy wrenches, detachable Supersocket wrenches and Agrippa tool holders. Also, adjustable wrenches; non-sparking safety wrenches; reversible ratchet wrenches; Vulcan chain pipe tongs, etc. Copies will be sent by the manufacturer if you write mentioning Blue Book.

"ROYERSFORD - EXCELSIOR"



**21-inch Motor Driven
Back Geared,
Upright
POWER DRILL**

Thoroughly modern and up-to-date. Equipped with all the good features a machine of its type should have. Speedy, accurate, simple in operation—rigid, sturdy and durable. Can be furnished with belt drive, if desired.



**POWER
HACK SAW
MACHINE
No. M2A**

**V-BELT
MOTOR
DRIVE**

Automatic Lift—
Automatic Shut-
off—Gravity Feed
—Swivel Vise—
Motor Drive
Through Milled
Gears. Belt drive
if desired.

*Send Quickmail Coupon No. 73 for full information
on the "Royersford—Excelsior" Line. Dealers Wanted.*

Royersford Fdry. & Machine Co., Inc.
100 Main St., Royersford, Pa.

The New Rousselle Punch Press

Adaptable to all types of small work, the makers place emphasis on the savings which can be effected because of the speed and flexibility of this sturdy little inclinable press. With automatic feed 10,000 operations per hour are said to be possible.

The attractive modern features include a non-repeating clutch which stops after each stroke regardless of the position of foot pedal. By removing a single pin, the press runs continuously as long as pedal is held down, and stops the instant pedal is released.

Standard stroke is $1\frac{1}{4}$ inches. Any stroke up to $1\frac{1}{2}$ inches may be furnished at extra cost. Crankshaft is made of strong, durable alloy steel. The clutch is simple and accessible. Clutch knife is arranged to take thrust lengthwise. The steel ram runs in heavy vee steel slides. Adjustment for wear is provided. Flywheel and frames are special castings designed to provide extra strength. Moving parts are hardened. Individual motor drive may be installed at any time. Without stand, may be used as a bench press occupying but little space.

The makers assert that these presses are thoroughly perfected, having been rigorously tested in strenuous every-day service in a number of large industrial plants. For full information, write to the David J. Ross Co., Benton Harbor, Michigan.



Barnes Piston Feed Pump

An attractive new circular has been issued by W. F. and John Barnes Co., Rockford, Ill., illustrating and describing in detail the Barnes Piston Feed Pump. If you want to know more about how it is made, what it is and what it does, write to the makers on your business letterhead for a copy.

07

START NOW!

TO SAVE TAP BREAKAGE,
INCREASE OUTPUT,
INCREASE ACCURACY
WITH THE NEW

PROCUNIER

STYLE "E"

High Speed
Tapping
Attachment

equipped with the
Revolutionizing
"TRU-GRIP"
TAP HOLDER



*THE MOST SENSIBLE TAP HOLDER THAT
EVER GRIPPED A TAP*

The extreme lightness and accuracy of the new TRU-GRIP tap holder eliminates tap breakage and lengthens the life of the taps.

*Send Quickmail Coupon No. 13 now
for full details.*

PROCUNIER SAFETY CHUCK CO.
14 S. CLINTON ST., CHICAGO, ILL.

Fitchburg Plain Cylindrical Grinder

Designed for plunge cut grinding only (6"x12"), the new Fitchburg grinder is said to occupy but half the floor space of other plain grinders for similar work. The Fitchburg grinder is without table traverse but has wheel spindle reciprocation. Truing devices may be furnished for semi-automatic operation; hand truing or the wheel hood mounted type may be used, depending on the work to be done.

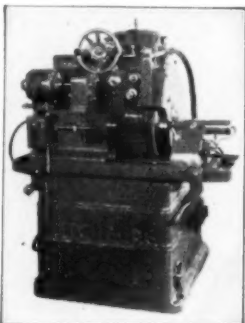
The unit is built around a standard Bowgage wheel head grinder, which has a complete automatic cycle, all dial controlled from the panel.

Headstocks can be supplied for live or dead spindle operation and the complete cycle can be interlocked to be operated from one lever. A retractable headstock center with a solid footstock can also be provided, offering advantages for some classes of work.

It should be observed that the grinding wheel is carried on the right hand side of the spindle, instead of the conventional left side. This consolidates the wheel spindle space with the headstock longitudinally, saving this floor space. Yet the unit has the weight and wheel diameter to handle the work of larger machines.

The machine can also be built in a chucking grinder model, and the work head can be swiveled to a suitable angle for taper work.

The makers, Fitchburg Grinding Machine Corp., Fitchburg, Mass., offer the unit as a condensed big machine with exclusive features for high production and accuracy. They will gladly send full details on request.



Fast Machines for Light Milling —

No. 0B

...screw feed for table

No. 0Y

...rack feed for table

**A limited number of each of
these profit-producing Plain Milling
Machines available for prompt
shipment.**



—Write now for quotation
if interested in savings in
light milling costs. Brown
& Sharpe Mfg. Co.,
Providence, R. I., U.S.A.

BROWN & SHARPE

Pioneer Vertical Bracket Coolant Pump

The new VB Pioneer pump is a compact, self-contained unit which bolts to the side of the machine or reservoir, handling coolant or lubricant for machine tools.

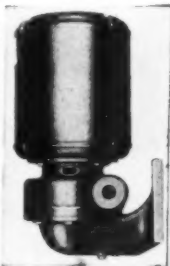
No suction piping is required. The intake is directly through the base bracket. The makers emphasize the ease of installation and accessibility of the entire unit, which may be dismantled by removing the flange bolts.

As will be noted from the illustration, the pump is mounted directly on the end of motor. It is a close-coupled unit for which the makers claim high efficiency over an unusually long service period.

Although intended for coolant supply, the liquid handled does not need to have lubricating properties. Any liquid not too highly corrosive or viscous may be pumped.

The makers affirm that no relief or by-pass valves are needed in the delivery line and that any degree of throttling may be accomplished without increasing the motor load.

Stick Quickmail Coupon No. 77 on your business letterhead, sign your name and position and mail to the makers, the Pioneer Engineering & Manufacturing Co., 31 Melbourne Ave., Detroit, Mich., for full details.



New Laminated Shim Catalog is Ready

The handsome, new 16-page catalog of the Laminated Shim Co., Long Island City, New York, illustrating some of the many uses of Laminated shims in modern machine assembly, is now ready for distribution. Laminated shims are recommended by their manufacturer for making precision adjustments at the job and for eliminating filing, grinding and machining and expensive delays while machines are returned to the repair shop.

The new catalog, which will be mailed free on request, is an interesting presentation of the many fields in which Laminated shims are in daily use.

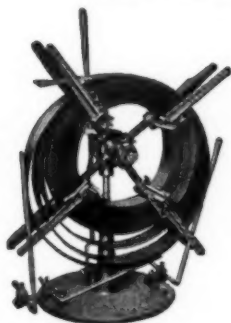
—SPEED UP—

**PUNCH PRESS
PRODUCTION**

with

LITTELL

**Automatic
Centering Reels**



One man can load and center heavy coils on a Littell Automatic Centering Reel in less than two minutes regardless of variations in inside diameters of coils. Centered coils revolving on ball bearings turn with the greatest of ease, which means stepping-up production with either hand or automatic feeding. Made in three sizes, plain or motor driven:

No. 3 for 300 pound coils

No. 5 for 600 pound coils

No. 10 for 1000 pound coils

We also manufacture Littell Automatic Roll Feeds for all sizes and makes of punch presses—also Punch Press Air Valves and Universal Air Nozzles for the safe and quick ejection of work pieces.

*Use Quickmail Coupon No. 41 in
sending for Littell circulars.*

F. J. LITTELL MACHINE CO.

4125 Ravenswood Ave.,

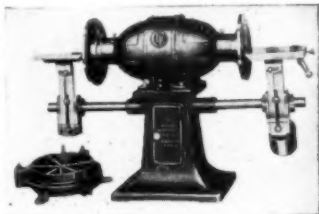
Chicago, Ill.

Manufacturers of Punch Press Feeds and Reels

New Cincinnati Disc Grinders

Several new disc grinders have been added to the general line of such equipment manufactured by the Cincinnati Electrical Tool Co., a division of the R. K. LeBlond Machine Tool Co., Cincinnati, O.

These may be had in the double end disc type as shown in the illustration, or with a disc on one side and a conventional type grinding wheel and wheel guard on the other side. The discs are said to be of high grade steel accurately machined and balanced to insure running true. Spindle is of nickel steel dynamically balanced and mounted on extra large ball bearings with special provision for radial and thrust loads.



On the double disc grinder, a table with hand lever feed is regularly supplied on the right side with a plain table on the opposite side, but this equipment may be changed to suit individual requirements. On the combination type unit a table with hand lever feed is regularly furnished on the right side, with a fully enclosed wheel on the other side.

The steel discs furnished as standard equipment may be had for gluing on abrasive discs or properly drilled for mounting steel-back abrasive discs. A disc press can be supplied for gluing abrasive discs to the steel discs.

The motor is of the fully enclosed type with magnetic starter incorporating overload and no-voltage protection as well as push button control.

For complete information, stick Quickmail Coupon No. 78 on your business letterhead, sign your name and position, and mail to the Cincinnati Electrical Tool Co. Cincinnati, Ohio.

The Oliver Instrument Company, Adrian, Mich., have issued a new bulletin illustrating and describing their Universal Tool and Cutter Grinder which will be sent, without obligation, to anyone interested.

CAM CUTTING

FOR B & S

AUTOMATIC SCREW MACHINES



PRICES ON HARDENED CAMS CUT TO CUSTOMER'S LAYOUT

	No. 00	No. 0	No. 2	No. 4	No. 6
Set of 3	\$6.20	7.65	9.35	19.25	24.35
Set of 2 (Lead & Cross Slide)	5.05	6.15	7.45	14.70	19.25
1 Cross Slide	2.10	2.50	2.90	5.35	6.05
1 Lead Cam	3.20	3.95	5.00	10.05	14.00
Set of 4 (1 lead 3 Cross Slides)	8.10	9.90	11.90	-----	-----

IF LAYOUT IS TO BE FURNISHED BY US, THERE IS AN ADDITIONAL CHARGE OF:

No. 00	-----	\$ 4.00
No. 0	-----	5.00
No. 2	-----	6.00
No. 4	-----	8.00
No. 6	-----	10.00

48 HOUR SERVICE ON COMPLETED CAMS
24 HOUR SERVICE ON CAMS NOT HARDENED

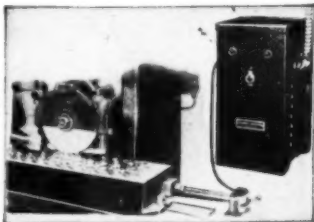
Send Coupon No. 69 for BANNER Catalog

BANNER MANUFACTURING CO.
1873 Clybourn Ave., CHICAGO, ILL.

Rectifier Supplies DC for Magnetic Chuck

Current supply for magnetic chucks in the tool room is the object of the new electronic rectifier developed by the Mellaphone Corp., Rochester, N. Y.

Using the mercury vapor rectifier tube, there are no moving parts and dust, grit or moisture cannot impair its operation. A standard full wave circuit is used and the high efficiency which is characteristic of electronic rectifiers assures low operating cost.



Designed to operate on 110 or 220 volts A. C., the rectifier will deliver 110 or 220 volts D. C. to the magnetic chuck. The model pictured operates on 110 volts A. C., with an output of 220 watts and the makers will gladly send you full information.

And Now—A Rubber Lubricant

The use of rubber parts in machines has increased greatly during the last few years, particularly in the automotive field. Rubber is also extensively used in weigh bar bearings, trunnions, axle spring seats, motor mountings, individual suspension controller arm bearings, shock absorber links, silence strips, V-belts and the like.

The lubrication of rubber parts has heretofore presented a troublesome problem because of the softening action on rubber of the usual lubricating agents and compositions.

George F. Willson, Cleveland sales representative of the Acheson Colloids Corp., Port Huron, Mich., has been granted a patent on a composition of which colloidal graphite is an important constituent. This new compound is said to afford effective and lasting lubrication of rubber mechanical elements.

Complete information regarding the new lubricant may be obtained by writing to the Acheson Colloids Corporation.

WITTEK

AUTOMATIC

Roll Feeds

For Every Size and Make of Punch Press

**FAST
ACCURATE
AUTOMATIC
SAFE**



Increases Punch Press Production

Keeps production at the same steady high level day in and day out—no fatigue or other human "let down". Easily installed on any press without alteration. Feeds automatically any stock from coils in lengths from 0" to 24" per press stroke. Saves time, operating costs and dies—reduces scrap to a minimum. A type for every requirement—Single Roll, Double Roll, and Compound with straightener.

Wittek Reel Stands

Automatic, Self-Centering, Ball-Bearing. Adjustable to any height, balanced at any angle, 500 lb. capacity. Prompt deliveries from stock. Also made in four other models.

Write Today for Bulletin "HF" giving complete details and specifications of WITTEK Automatic Roll Feeds and Reel Stands.

USE QUICKMAIL COUPON No. 25



WITTEK MANUFACTURING COMPANY

4305-9 W. 24TH PLACE.

CHICAGO, ILL.

Logan Centrifugal Pumps

Available in 9 models, with capacities from 4 to 150 gallons per minute, Logan pumps are offered with direct motor drive, belt drive or adapters for direct power take-offs.

Logan pumps are said to be self-priming under all normal applications without submerging any part of the pump in the liquid. Foot or check valves are only required on extreme installations approaching maximum lift where the capacity of the line may exceed that of the pump reservoir. Where used as an integral unit of any operation, there is said to be no delay in delivery of the liquid, the instant the operation starts.

It is asserted that the Logan will handle practically any type of liquid. There are no metal-to-metal contacts and no close clearances exposed. Rotary seals protect the bearing surfaces, and it is said liquids charged with abrasives, filings and most corrosive impurities can be handled safely.

Coolant service on machine tools, transfer service, circulating cooling mediums, circulating quenching oil, pumping out underground tanks, sump pump service and irrigation are some of the fields in which Logans are being used.

A copy of the new catalog on the Logan Line, complete with illustrations, installation diagrams and specifications will be mailed you on request. Write Logansport Machine, Inc., Logansport, Ind., on your business letterhead and mention Blue Book.



The Progressive Welder Company, 737 Piquette, Detroit, Mich., have issued a profusely illustrated bulletin covering their line of hydraulic welding guns and equipment.

END MILLS

for All Purposes

PROGRESSIVE



The standard line of Progressive Shear Cut End Mills contains a tool for practically every job. They are guaranteed to give accurate and economical service, for careful attention is constantly given to insure their accurate workmanship and the quality of all materials.

SHEAR CUT



END MILLS

Send us your blue prints on special end mills. Years of experience in their design and manufacture is at your disposal without obligation. We can give you good prices and quick deliveries.



*Write for a copy of the Progressive Catalog
Use Quickmail Coupon No. 58.*

PROGRESSIVE TOOL & CUTTER CO.
FERNDALE, MICHIGAN

FORMERLY

DRILLING

Savage Nibbling Machines Offer New Designs

Increased power, fewer moving parts, greater safety and easier operation are among the advantages claimed for the recently re-designed line of Savage nibbling machines. The new features include direct-over-center drives, totally enclosed heads and one-piece revolving heads. There are no moving parts in the streamlined operating heads except the metal cutting tools. Fast and accurate cutting is accomplished by guide template or to a scribed line. It is claimed that alloy steels may be cut as easily as boiler plate and that the new units are sufficiently powerful to punch starting holes to



$\frac{1}{2}$ rated capacities, which is advantageous on inside cutting. A combination collet and ram lock holds tool in place while tightening and simplifies tool changing, and it is said that the re-designed main frame provides additional strength and better balance.

The new Savage nibblers are conservatively rated to cut from $\frac{1}{8}$ to $\frac{1}{2}$ inch thick sheet metal and have a range of throat depths from 8 to 36 inches for handling sheets in any length, and from 16 to 72 inches wide. The older type metal cutters manufactured since 1914 with capacities for cutting $\frac{3}{4}$ inch mild steel have also been improved in design and construction.

Full information may be obtained by writing on your business letterhead to the W. J. Savage Co., Knoxville, Tenn.

Information of practical value to users of cemented carbide tools is contained in Bulletin No. TA-371, just issued by the Carboloy Company, Inc., 29 East Jefferson Ave., Detroit, Mich. Copies may be obtained upon request.

FORMERLY manufactured by Rockford Machine Tool Co., of Rockford, Ill.; thousands of these drills have been installed in plants the country over, where they have been giving universal satisfaction.

Counterbalanced, eight-speed spindle, made from high carbon special steel, has quick advance and return; positive feeds are instantly available while machine is in operation; all controls within easy reach.

DRILLING MACHINES

14'-20'-21'
Stationary
Head

24'-28'-32'
36'
Sliding
Head

* * *

Belt or
Motor Drive



*Write for
Complete Details*

POWERFUL—SIMPLE— DURABLE—ACCURATE

We have been builders of Drilling Equipment for more than 20 years and, in addition to the above drills, manufacture the Cleere-man Automatically Oiled, Anti-Friction, High Speed Drilling, Boring and Tapping Machines; Gang Drills and Special Drilling Machinery.

CLEEREMAN MACHINE TOOL CO.

GREEN BAY, WISCONSIN

(Formerly Green Bay Barker Machine Tool Works)

The Jarvis Vario-Flex Grinder

Maintaining constant surface speed of grinding wheels regardless of loss of diameter, the Vario-Flex is said to show savings of time and wheel cost on tough grinding and snagging jobs.

For example, a 10-inch vitrified wheel at 2200 r.p.m., has a surface speed of 5500 s.f.m., and with the 14 different speeds of the Jarvis it is asserted that the wheel may be worn down at a maintained peripheral speed to $4\frac{1}{2}$ inches, operating then at approximately 4700 r.p.m., the top speed of the machine.



The special features include 12 to 14 instant speed changes without stopping the machine; a totally enclosed ball bearing motor; heavy duty cast iron base with large rubber-tired ball bearing wheels; complete 360° swivel of motor unit; and heavy duty hand piece with 2 double-row ball bearings.

Three different types are available with 1, $1\frac{1}{2}$ and 2 h.p. motors, respectively.

C. L. Jarvis Co., Middleton, Conn., will gladly send you a copy of their catalog "MST" on request.

The "High Speed" Sensitive Precision Drilling Machine

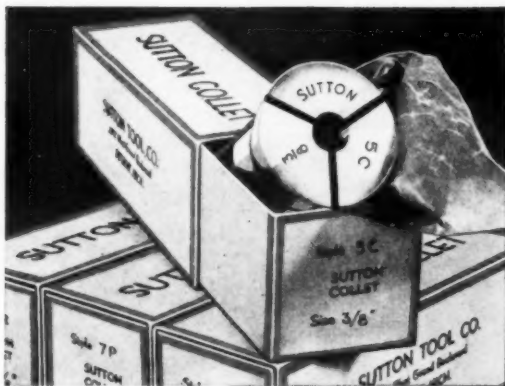
Light manufacturing and precision tool room or model work are the fields in which the new "High Speed" sensitive drilling machines are finding favor. The principle of a separate arm for actuating the work spindle through ball thrust bearings is said to simulate the effect obtained in the jewelers drill where the spindle is fed downward through pressure of a finger on top of the spindle.

The spindle slides through a quill mounted on annular ball bearings which, it is claimed, prevents

(Continued on Page 84)

SUTTON COLLETS

for Lathes and Milling Machines



Spring Tempered

to give long and accurate service.

Threads Chased

to uniform size with single-point tool.

Precision Ground

inside and out on hardened arbors.

Made by the developers of Sutton **DIAMOND-GRIP** Collets for screw machines.

Send Quickmail Coupon No. 59 for circular listing
SUTTON COLLETS for all makes of
lathes and milling machines.

SUTTON TOOL CO.,

2836 W. Grand Boulevard
DETROIT, MICHIGAN

belt pull from being transmitted to the spindle, operating at 1500, 3000 or 6000 r.p.m. A two speed unit driven by an endless flat belt is also available on order, operating at 2700 or 5500 r.p.m.

Maximum spindle travel is $2\frac{1}{4}$ inches, conveniently limited up or down by a quickly adjustable depth gauge. The table is $5\frac{1}{4} \times 5$ inches, easily adjusted for height and quickly removable from the column. A self-cleaning taper keeps chips and dirt away from the ground column. Working surface of the base is 4×6 inches, accommodating work $7\frac{1}{2}$ inches in height. Front pulley, upper spindle and belt are adequately protected by a guard, held in place by a single thumb nut.

A pedestal type is also available, with optional foot treadle. The makers, the High Speed Hammer Co., Inc., Rochester, N. Y., will be glad to send you full information if you write to them on your business letterhead.

Atlas Safety Belt Guards

Atlas Press Co., Kalamazoo, Mich., has recently announced new belt shields now available for any Atlas 9 or 10 series lathes with self-contained countershaft. Addition of these guards completely encloses the transmission of any recent Atlas lathe.

Both guards are aluminum castings with pin hinges for quick raising and speed changes. Removal of the guards is unnecessary for changing belts. The left guard covers the motor-to-countershaft belt and has a special inner guard for the pulley on the countershaft. Right guard covers belt from countershaft to lathe spindle. Entire assembly is ready-tapped for easy installation.

Further information may be obtained from the makers.



HI-DUTY PNEUMATIC MARKING MACHINE

This is a light, general purpose hand marking machine for use on flats, rounds and irregular surfaces, which is supplemented with an air cylinder to take the place of the foot pedal for applying pressure to



raise the work table to the lettering tool. Air from the shop line is used and the four way foot valve assures fast operation. Machine uses solid flat or round dies, as well as adjustable type, in flat or knurl type holder.

Advanced business methods demand improved records of metal fabrications and this machine makes marking operations quick and simple. Part numbers — order numbers — manufacturer's name and other important data marked on your products will mean permanent records, to last the life of the part. This general purpose marking machine will help you.

Send Coupon No. 70 for complete catalog of our full line of Marking Tools, Machinery and Equipment.

Designed and Built By

GEO. T. SCHMIDT, INC.,

1802 Belle Plaine Avenue,

Chicago, Illinois.

Builders of Marking Equipment since 1895.

How To Run A Lathe

The 33d edition of the well-known machinists' manual—"How to Run a Lathe"—has recently been announced by its publisher, The South Bend Lathe Works, South Bend, Ind.

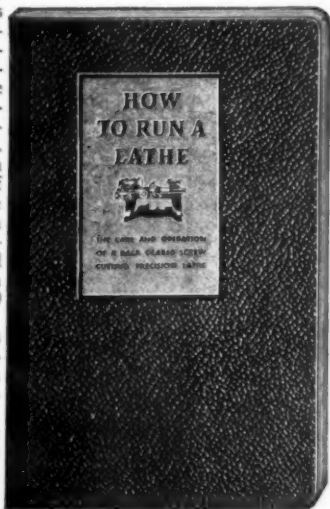
The new edition contains 160 pages presenting the latest and most authoritative information about the fundamental operations of modern lathe practice. Instructions on every phase of lathe work are given in detail in easily understandable language and accompanied with more than 300 illustrations.

The book was originally introduced in 1907 in the form of a 16-page manual. During the last 30 years, more than 1½ million copies have been printed and distributed throughout the world.

"How to Run a Lathe" has been printed in four languages and is a standard book of instruction in technical schools, trade schools, apprentice shops, etc., in practically every country.

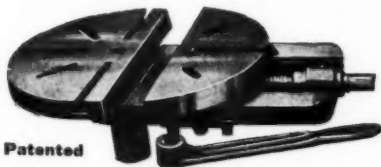
The book is much used as a handy reference by men engaged in metal working operations. In particular it has helped homecraft enthusiasts and hobbyists anxious to expand their interest into metal working projects.

(Continued on Page 88)



FREE TRIAL OFFER

Combination Drill Table and Vise



Patented

GUARANTEED To Save Its Cost in Labor Every Six Months

To save time with quicker and more accurate set-ups in your shop, install a Modern "Combination." It's safer and easier to use, handles difficult jobs without blocks, clamps or awkward plates and helps to prevent accidents by eliminating dangerous holding by hand. Manufactured in models to fit every drill press. Write today for complete information on the "Combination" and our 30-day trial, giving dimensions of the table you wish to replace.



30-DAY FREE TRIAL

Costs you nothing. If you are not satisfied in 30 days, we will pay the freight both ways.

Use Quickmail Coupon No. 57

MODERN MACHINE TOOL CO.
JACKSON, - - - MICHIGAN

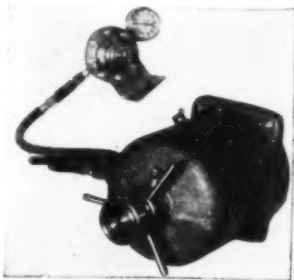
Manufacturers of the "Modern" Cutting-Off Machine

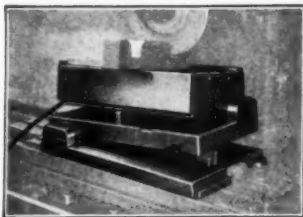
Besides dealing with all types of lathe work and showing the proper set-up for every kind of a lathe job, the book also contains a great amount of useful shop information of a general nature, such as reference tables and formulae, tables of cutting speeds of metals, application of lathe tools, cutting screw threads, metric screw threads, taper turning and boring, milling and keyway cutting, bushing work, gear cutting, proper application and types of drives, shop hints, short cuts, etc.

Copies are priced at 25 cents each and will be mailed postpaid anywhere in the world. Stamps or coin of any country are accepted and requests for copies should be addressed to the manufacturers at South Bend, Ind.

New Model "A" Die Cushions

A new model "A" pneumatic die cushion especially designed for inclinable presses is announced by Dayton Rogers Mfg. Co., Minneapolis, Minn. Made in 7 sizes, the cushions have a drawing capacity from 2½ to 5 inches. The new design includes a hand wheel and stop for adjusting and predetermining the height of the piston pressure plate at all times. It may be used for all drawing and forming die actions as well as to control all stripping actions on compound blanking and piercing dies. It readily replaces springs and rubbers on dies already in use. The cushion is a self-contained portable unit, directly connected to the air line, operating on a pressure of from 20 to 150 pounds and will produce a draw ring holding pressure of from ¼ to 8 tons, controlled by the regulator and recorded on the gauge. Further information may be obtained by writing direct to the manufacturer.





SHORT SHORT STORIES ABOUT The Magna-Sine

**NOT FOR SALE
AT \$500!**



"**N**OW that you've had the Magna-Sine for a couple of months, how do you like it?" our representative asked the production manager of large optical equipment concern.

"I'll tell you," he answered, "I haven't been in the tool room at any time since we received it that our Magna-Sine has not been in use. And results... if we couldn't replace it immediately, we wouldn't take five hundred dollars for it!"

That's only part of this true story. The most convincing evidence of the value of the Magna-Sine to this concern was produced in the form of a purchase order for another unit. In their grinding operations, where single and compound angular set-ups are required, TWO Magna-Sines are now meeting their demands for production efficiency and extreme accuracy.

Learn how new savings can be effected in YOUR grinding department. Quickmail Coupon No. 63 will bring you full information.

The MAGNA-SINE

ROBBINS ENGINEERING CO.

639 Mt. Elliott Avenue,

Detroit, Michigan

New Greenerd Hydraulic Presses

Made with identical frames, the new Greenerd 2 and 4 ton presses vary in the pump and motor equipment. Cast of special hydraulic semi-steel, they are equipped with a $3\frac{1}{2}$ inch steel piston with 3 cast iron rings. The rams are made of alloy steel with a plug of the same size as the ram. Chevron type packing is used and the glands are equipped with bleeder pipe to take care of surplus seepage on the ram.

Motor and hydraulic pump are mounted on opposite sides of the main housing and the pump is connected between a 16 gallon sump in the base and a pair of hydraulic valves mounted on the side of the frame.

A hand lever puts the ram in motion. Pressure will remain on the work until lever is released, which automatically returns ram up to power stop which may be set at any predetermined position within the 16 inch stroke. Each press has an adjustable stroke from 1 to 16 inches and the ram is 2 inches in diameter. Pressure may be set at any point between $\frac{1}{2}$ ton and full capacity. Each press has a machined working table 8x8 inches with a $2\frac{3}{4}$ inch slot. Height from floor to table is 34 inches.



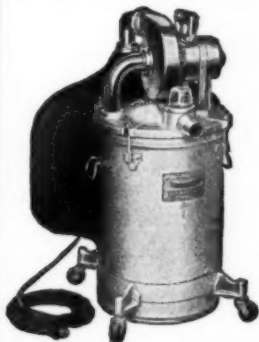
When the press is equipped for 2 tons pressure, ram speeds of 276, 224 or 150 inches per minute on down stroke under full pressure, may be had as ordered. Return stroke would be 480, 330 or 216 inches, depending on the downward speed of ram.

Equipped for 4 tons pressure, ram speeds of 132 or 220 inches per minute may be had, with return strokes of 216, 330 or 558 inches per minute.

The 4 ton press with 200 inch speed per minute on down stroke under full pressure and 330 inches on up stroke requires a 5 h.p. motor. The other models are equipped with 3 h.p. motors.

These presses are offered as self-contained, ruggedly built, inexpensive units and the Greenerd Arbor Press Co., Box 415 Nashua, N. H., will gladly send a bulletin to any applicant giving complete information.

***For the First Time! Vacuum Cleaning
Made Applicable to All Plant Cleaning
Requirements at Low Cost With***



Breuer's Ball Bearing

TORNADO

**Portable Industrial
Vacuum Cleaner**

This new machine is designed to solve all industrial cleaning problems without the expense of installing a stationary plant or using so-called portable cleaners which are too heavy and expensive for average plant applications.

TREMENDOUS POWER

1 H. P. Motor—46 $\frac{1}{4}$ Waterlift

Do not confuse the TORNADO with light-duty cleaning machines. Model 112 combines light weight (only 40 pounds) with tremendous cleaning power (1 H. P. G. E. ball bearing Motor—46 $\frac{1}{4}$ " waterlift). Patented principle of separating fine dust from refuse and depositing heavy dirt in tank makes this cleaner as applicable to heavy duty work as the largest machines. Sturdy construction insures long life and low yearly cost.

Has plenty of power and capacity to handle dust, dirt, sand, sawdust, metal scraps, filings, etc. Attachments available for cleaning boiler tubes, ovens, machinery, walls, floors, pipes, etc. Motor unit can be quickly removed for blowing dust from motors, etc. The handiest heavy duty, low cost, time and labor saving unit ever built.

We prove TORNADO advantages right in your plant without obligation. Send Quickmail Coupon No. 30 for details of trial offer and further information or write.

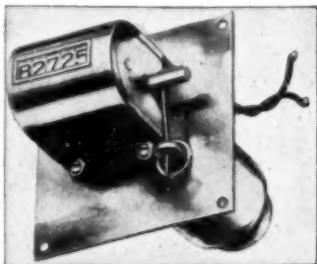
BREUER ELECTRIC MFG. CO.
842 Blackhawk Street, Chicago, Illinois

A New Electric Counter

A new line of electrically operated counters adapted to economical built-in application on a wide range of coin operated machines, production machinery and similar equipment is offered by The Production Instrument Co., 1325 S. Wabash Ave., Chicago.

The counter measures $1\frac{7}{8} \times 1\frac{1}{2} \times 1\frac{3}{4}$ inches and is mounted on a plate $2\frac{7}{8}$ inches square. Operating relay extends $1\frac{7}{8}$ inches below the mounting plate.

The number wheels are large and the figures are especially legible in black against a white background. The lightweight coined wheels require minimum driving effort assuring long-lived dependable recording.



There are no spaces between number wheels which contributes to legibility. Five wheels give a capacity of 99,999 which should be ample for small counters. The operating relay actuates lever arm of the counter which has a throw of only $\frac{1}{2}$ inch. A positive action prevents skip or overthrow.

The case enclosing the counter mechanism is of steel and since case cover is fastened at bottom and the Type SEC electric counter is a non-reset instrument, a simple, tamper-proof installation may be made.

The makers will gladly send you full information on request. Write them on your business letterhead.

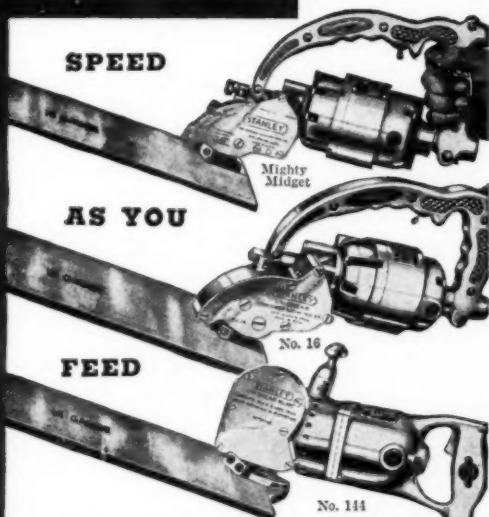
Gits Brothers Issue New Catalog

Anybody who has to contend with lubrication problems will find a lot of helpful information in the new catalog handbook issued by Gits Brothers Mfg. Co., 1848 S. Kilbourne Ave., Chicago. Over 1000 styles and sizes of oil cups, oil and grease seals, oil cans and gauges are illustrated and described. Write for a copy on your business letterhead.

SPEED

AS YOU

FEED



Cut sheet metals and other sheet materials in any pattern. Follow straight lines, curves, angles with hairline accuracy! Leave smooth, finished edges. That's what you can do with a Stanley Unishear — the light, safe, portable electric shear. New low prices bring "Mighty Midget" Unishear within reach of anyone who has sheet materials to cut. Ask your dealer for free demonstration, or write for descriptive literature. Stanley Electric Tool Division, The Stanley Works, 141 Elm St., New Britain, Conn.

ILLUSTRATED:

Top: the "Mighty Midget" Unishear, capacity 18 gauge hot rolled steel, other materials in proportion. Center, No. 16 Unishear, cuts 16 gauge hot rolled steel, other materials in proportion. Lower, No. 144—the heavy duty portable unishear, for anything up to 14 gauge hot rolled steel. Stationary Unishears are available to cut materials up to $\frac{3}{4}$ " boiler plate.

STANLEY UNISHEARS

THE ELECTRICALLY DRIVEN HAND SHEARS

Hoffman "Flexbox" for Heat Treating

Increased operating efficiency is claimed for the Hoffman "Flexbox" in carburizing, annealing and other heat treatment processes. It is produced by the American Manganese Steel Co., Chicago Heights, Ill.

As will be noted from the illustration, "Flexbox" is made in six separate parts. The material used is heat and abrasion resistant AMSCO alloy. The corrugated sides are tongued to fit into grooves in the corrugated ends and may be keyed in place. The frame thus formed nests on a flanged bottom plate with the bottom plate fitting and plates for use where the contents must be lifted with the box.



"Flexbox" it is claimed, eliminates the distortion or cracking commonly experienced with furnace boxes of solid cast or welded construction, caused by the alternate heating and cooling. There is sufficient clearance between the tongue and groove to absorb expansion from heating of the parts and to allow contraction in cooling. However, there is said to be no appreciable gas leakage with this new design at the joints.

"Flexboxes" are asserted to be lighter than ordinary boxes, hence easier to handle. Sections of the boxes may be easily and quickly replaced at a fraction of the cost of the entire box. A request on your letterhead will bring descriptive literature from the maker.

BALDOR

BALL
BEARING

GRINDERS

**RUGGEDLY BUILT FOR HEAVY DUTY
AND LONG LIFE — they can take it!**



BUILT FOR HEAVY PRODUCTION SERVICE

No. 996-B. 10-inch, ball-bearing Bench Grinder.
1½ H. P. BALDOR Motor. 1725 r. p. m. 220 volts,
3-phase, 60 cy. Wheels, 10" dia., 1"
face, ¾" bore. Net Weight, 155 lbs. **\$84.00**
ONE YEAR GUARANTEE.

*USE QUICKMAIL COUPON No. 18 for Bulletins on complete line of
BALDOR Bench and Pedestal Grinders and Buffers.*

BALDOR ELECTRIC CO.

(Electrical Manufacturers for 17 years)

4368 Duncan Ave.,

St. Louis, Mo.



***For specifications sheet and price lists
use Quickmail Coupon No. 55.***

Now ready for you!

The New S.S. WHITE Catalog

containing descriptions and illustrations of the following equipment: **S. S. WHITE FLEXARMS**--complete flexible shaft arms, with industrial hand piece and ball-bearing motor coupling for easy connection to any motor of suitable rating, making an inexpensive shop tool for die-sinking, drilling, grinding, buffing and many other uses.



S.S. WHITE INDUSTRIAL HANDPIECES

S.S. WHITE Super-Quality
BURS, DRILLS, ABRASIVE POINTS
DISKS, WHEELS, ROTARY FILES, etc.

MAIL THE COUPON for
free copy with Price List

The S. S. WHITE Dental Mfg. Co. INDUSTRIAL DIVISION

10 East 40th St., Room 2310-H, New York, N. Y.

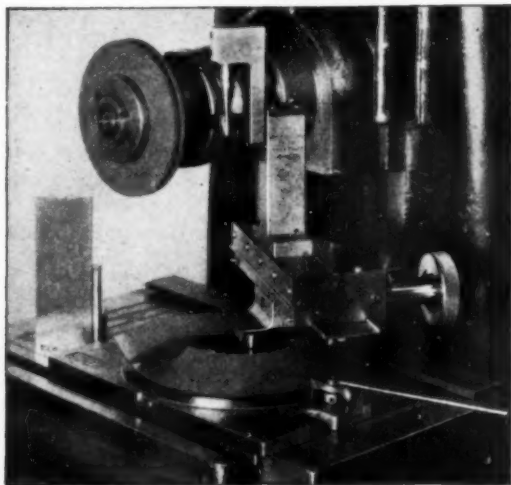
Send me a copy of the new Catalog TC with Price List.

NAME

ADDRESS

CITY STATE

The Vinco Angle Tangent to Radius Dresser **for** **Internal, External and Surface Grinding Machines** *Patented June 5 1934, other patents pending*



ACCURACY AND ECONOMY

The Vinco Dresser was designed for the accurate and economical dressing of angles and radii tangent on abrasive wheels. It functions perfectly for it has the basic patented feature of dressing angles and radii from the same axis without moving the diamond, angles and radii are always tangent. Angles are accurate for the Index Plate and Vernier are graduated on a Vinco Master Dividing Head to a one ten thousands of an inch accuracy. It has adjustable stops, the index plate can be set at any desired angle. The cut above shows the Dresser fitted with a Vinco Special Attachment that permits the dressing of complete half circles from .050 to .565 radii. The Dresser fitted with the regular diamond will dress all angles and radii tangent. The Vinco Dresser is precision made, all parts subject to wear are hardened, ground and lapped. It is guaranteed to be satisfactory.

Send Coupon No. 48 for Descriptive Circular

VINCO TOOL COMPANY
7348 CENTRAL AVE., DETROIT, MICHIGAN

New 17" Two-Spindle "DELTA" DRILL PRESSES



SPEEDS

**385, 600,
935, 1450
and 2240
r. p. m.**

\$249.²⁵

**With No. 2 Morse Taper
Spindles, less motor.**

Meeting with Growing Favor Wherever Used

The heads of this drill press with the stream-lined guards completely covering the spindle pulleys and belts, are of the same design that has proved so popular in the previous models. Heads are interchangeable, so that either two spindles with No. 2 Morse tapers, two spindles with Jacobs chucks, or one of each type can be used on the machine as desired. Spindles also may be quickly interchanged without changing heads.

Exclusive inverted-spindle design, with automobile-type 16-tooth spline drive and floating spindle sleeve. Spindles carried in New Departure self-sealed ball bearings. All ball bearings are lubricated at the factory, and require no further attention or lubrication during their entire life.

***Send Coupon No. 29 for name of nearest dealer and special
circular giving full details.***

DELTA MFG. COMPANY
691 E. VIENNA AVE., MILWAUKEE, WIS.

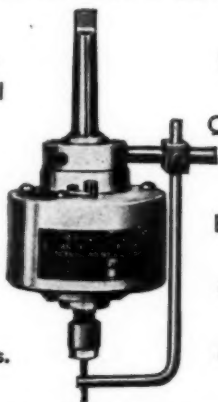
ERRINGTON HYSPO

Super-Sensitive Ball Bearing

Cone Drive

2 to 1 Auto-Reverse Tapping Chuck

Combination
Bronze & Ball
Bearings
Thru-Out
—
Easy and
Economical
Replacement
of
Cone-Clutches.



Depth gauge
facilitates
Quick-Handling
Especially
on
Bottom-Holes
—
Other Styles
and Sizes
0" to 2" taps

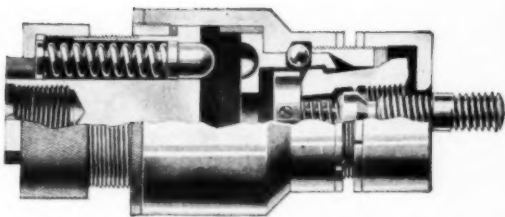
Size	Taps in Steel	Taps in Cast Iron	Price	Code
No. 00	0" to 3/16"	to 1/4"	\$35.00	Phlam
No. 0	to 3/8"	to 1/2"	\$50.00	Phalanx

The principle on which this Style is designed is especially effective on very small tapping; whereas in the No. 0 size the Frictional Grip is Greatly INTENSIFIED, to cover a wider range, without loss of sensitiveness.

Errington Mechanical Laboratory

Main Office and Works: STATEN ISLAND, New York

Chicago Office: New York Office: Boston Office:
6047 N. Talman Ave. 220 Broadway 930 Old South Bldg.



TITAN STUD SETTER

Sets Studs to a Uniform Degree of Tightness without Strained or Mutilated Threads

The Titan Stud Setter is a new controlled drive type for driving stud bolts, being full automatic in loading and releasing. It is a power-driven unit adaptable to all types of drill presses, air or electric tools, both portable and stationary. Operates at high or low speeds. Positive in driving and automatic in releasing. Studs may be set to any predetermined degree of tightness.



The possibilities of increased production with this tool, due to its capacity, speed range and service, plus the added economy that its safety features assure by automatic operation—all contribute toward making it a tool worthy of investigation and profitable to use.

**TITAN
TOOL
COMPANY**



**FAIRVIEW,
PENNA.,
U. S. A.**

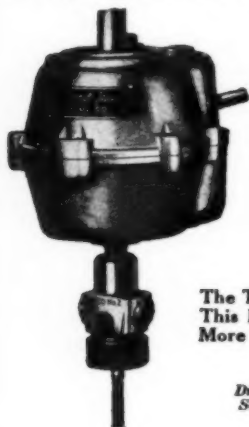
THE ONLY TAPPER WITH A LEATHER CLUTCH

Ettco - Emrick

TAPPING ATTACHMENTS

ETTCO pioneered sensitive tapping 15 years ago with a leather lined friction driving clutch.

As yet we have found no substitute to equal the smooth, consistent super-sensitive action of leather for the exacting requirements of tapping.



The 1937 clutches have about double the "pull" and wear. Taking the Tapper apart and changing clutches is now a matter of a few minutes.

The Tappers have ball bearing spindles — needle bearing intermediate gears and all helical gears to insure the greatest possible speed.

**The Tap Idles "In"—Not Reverse—
This Means Better Holes and Far
More Tap Life.**

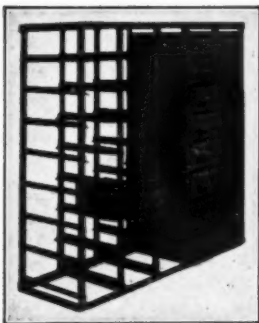
*Drop us a line for our catalogue.
Send Quickmail Coupon No. 49*

These tappers are used with the ETTCO *multiple tapping system* and our No. 71 *gravity foot operated tapping machine*.

ETTCO TOOL CO.
594 JOHNSON AVE. BROOKLYN, N. Y.

SAVE...

Time, and Completely Utilize Shop Space with NEW STERLING RACKS



Sterling Racks provide a place where parts are quickly found, and make parts easily accessible.

A Sterling Rack and Box Unit makes an ideal "file" for special tools, or machine parts or accessories used for certain jobs.

Sterling Racks will relieve crowded working conditions, due to piled up shop boxes in alley-ways and around machines. They put these up out of the way, tidy up your shop and by making it easier to get around save workmen's time.

Racks so designed that complete self contained units of any size can be welded together at our plant to conform to your space requirements.

Unit shown for 40 boxes 10½" wide 6" high and 21" long, is 60" high, 64" long and 21¼" wide. Boxes have cardholders.

**Sterling Factory
Equipment Co.,
Providence, R. I.**

STERLING FACT. EQUIP. CO. PROVIDENCE, R. I.

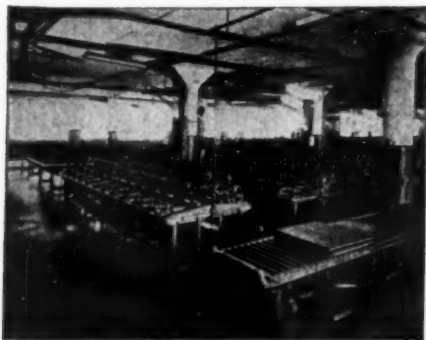
- ☐ Kindly quote on rack shown.
☐ Kindly quote on following size rack.

Name

Company

Address

6 FLOORS



FULL OF "HALLOWELL" STEEL WORK BENCHES

and that represents a lot of benches to be stuck with—should, for any reason, they be unsatisfactory.

This user did not hesitate . . . for careful investigation proved without a shadow of a doubt that "Hallowell" Work Benches of Steel could not be equalled for strength and durability. AND, THEIR SUBSEQUENT PERFORMANCE ON THE JOB HAS AMPLY JUSTIFIED HIS CHOICE!

The same facts that convinced him are YOURS to examine; compare and buy on merit. Complete details and prices will be sent you upon request.

STANDARD PRESSED STEEL CO.

BRANCHES

BOSTON

DETROIT

INDIANAPOLIS

JENKINTOWN, PENNA.

Box 559

BRANCHES

CHICAGO

ST. LOUIS

SAN FRANCISCO

DRILL JIG**BUSHINGS**

Standardized



Prompt delivery from stock on over 10,900 standard items — over 6700 ACME Standard — over 4200 A. S. A. Standard — all completely finished ready for use. *Special sizes made to order.*



Made in our new plant by the most exacting and scientific methods — insuring accurate fit plus long wear — concentric within .0003" full indicator reading.

Types shown at left, top to bottom, are: plain stationary press fit, type 'P'; shouldered stationary press fit, type 'S'; removable slip, type 'R'.

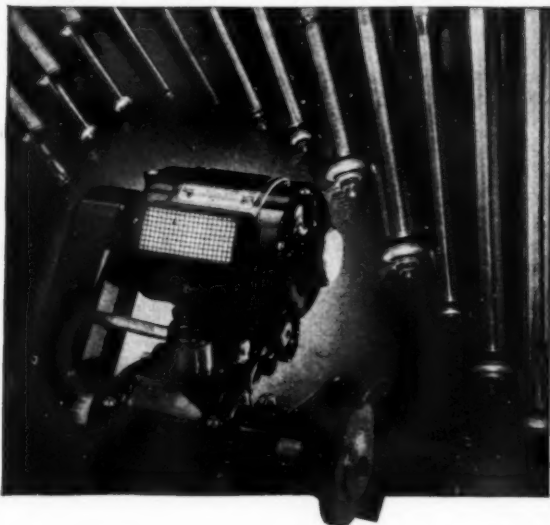


Send *Quickmail Coupon No. 39* for bulletin containing complete data and low prices. Satisfactory service guaranteed.

ACME
INDUSTRIAL CO.
210 N. LAFLIN ST.,
CHICAGO, ILL.

12^{IN}1

A whole battery of grinders in one!
If you have a Dumore No. 5
Grinder, with an assortment of
quick-change Quills you can lick a
vast variety of tough grinding jobs!



Dumore Quills grind internally, holes $\frac{1}{2}$ to 18 inches deep . . . diameters down to $\frac{1}{8}$ inch . . . external grinding, of course . . . speeds up to 42,500 r. p. m. . . and all with accuracy to a tenth (.0001"). Multiply your grinder's capacity by adding some or all of this dozen extra Quills. A Dumore Distributor near you will be glad to demonstrate any Tool, without obligation.

Use Coupon No. 10 for further information and name of nearest Distributor.

THE DUMORE CO., Dept. 247-J, RACINE, WIS.

This refers to your
ad in Sept. issue of
Hitchcock's Blue Book.

**MORRISON
MACHINE
PRODUCTS, INC.**

ELMIRA, N. Y.

1

This refers to your
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Hitchcock's Blue Book.

**DREIS & KRUMP
MFG. CO.**
7440 Loomis Blvd.
CHICAGO, ILL.

7

This refers to your
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Hitchcock's Blue Book.

**HARDINGE
BROTHERS, INC.**

ELMIRA, N. Y.

2

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**BUFFALO FORGE
CO.**

161 Mortimer St.
BUFFALO, N. Y.

8

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Hitchcock's Blue Book.

**HARDINGE
BROTHERS, INC.**

ELMIRA, N. Y.

3

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**JONES & LAMSON
MACHINE CO.**

SPRINGFIELD, VT.

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CO.**

1359 Altgeld St.
CHICAGO, ILL.

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Hitchcock's Blue Book.

THE DUMORE CO
RACINE, WIS.

10

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ad in Sept. issue of
Hitchcock's Blue Book.

**ARMSTRONG
BLUM MFG. CO.**
**5741 Bloomingdale
Ave.**
CHICAGO, ILL.

5

This refers to your
ad in Sept. issue of
Hitchcock's Blue Book.

**CHICAGO WHEEL
& MFG. CO.**
1101 W. Monroe St.
CHICAGO, ILL.

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**ARMSTRONG
BROS. TOOL CO.**
308 N. Francisco Av.
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**CHICAGO WHEEL
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12

7

Stick coupon on a postcard or letterhead and sign name, title and firm. It will bring a bulletin on Chicago Press Brakes.

DREIS & KRUMP MFG. CO.

1

Stick coupon on your letterhead and sign your name, title and firm name for a copy of the bulletin Economy Facts describing Morrison Master Feed Fingers.

MORRISON MACHINE PRODUCTS, INC.

8

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on the Buffalo Bending Rolls.

BUFFALO FORGE CO.

2

Stick coupon on your letterhead and sign your name, title and firm name for a copy of bulletin BB4 on the Hardinge Horizontal Milling Machine. (See Coupon 3)

HARDINGE BROTHERS, INC.

9

Stick coupon on letterhead only and sign your name, title and firm for catalog on Threading Tools.

JONES & LAMSON MACHINE CO.

3

Stick coupon on your letterhead and sign your name, title and firm name for a copy of bulletin BB2V on the Hardinge Vertical Milling Machine. (See Coupon 2)

HARDINGE BROTHERS, INC.

10

Stick coupon on letterhead or postcard and sign name, title and firm for information on Dumore Grinders.

THE DUMORE CO.

4

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Cullman Speed Reducers.

CULLMAN WHEEL CO.

11

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on DeLuxe Handee Grinders.

CHICAGO WHEEL & MFG. CO.

5

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Marvel No. 18 Hack Saws.

ARMSTRONG-BLUM MFG. CO.

12

Stick coupon on letterhead or postcard and sign name, title and firm for Handee Grinder on 10 day trial.

CHICAGO WHEEL & MFG. CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Armstrong Bros. Tools.

ARMSTRONG BROS. TOOL CO.

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**PROCUNIER
SAFETY CHUCK
CO.**
14 S. Clinton St.
CHICAGO, ILL.

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**WYZENBEEK
& STAFF**
642 Washington Bl.
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**TOMKINS-
JOHNSON CO.**
JACKSON, MICH.

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**GALLAND-
HENNING
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2753 S. 31st St.
MILWAUKEE, WIS.

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**PIER EQUIPMENT
MFG. CO.**
626 Cross St.
BENTON HARBOR, MICH.

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**DAVID J. ROSS
CO.**
BENTON HARBOR,
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SKILSAW, INC.
3318 Elston Ave.
CHICAGO, ILL.

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R. G. HASKINS CO.
4654 W. Fulton St.
CHICAGO, ILL.

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1408 Maumee St.
ADRIAN, MICH.

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MACHINERY
BUILDERS**
KALAMAZOO, MICH.

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**BALDOR
ELECTRIC CO.**
4368 Duncan Ave.
ST. LOUIS, MO.

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**RIVETT LATHE &
GRINDER, INC.**
Brighton
BOSTON, MASS.

24

19

Stick coupon on letterhead or postcard and sign name, title and firm name for catalog on the complete Wyco line.

WYZENBEEK & STAFF

13

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Tru-Grip tap holder.

PROCUNIER SAFETY CHUCK CO.

20

Stick coupon on letterhead or postcard and sign name, title and firm for your bulletin on Nopak Valves.

**GALLAND-HENNING
MFG. CO.**

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Stick coupon on letterhead or postcard and sign name, title and firm for circular on T-J Hydraulic Cylinders.

TOMKINS-JOHNSON CO.

21

Stick coupon on your letterhead and sign your name, title and firm name for information on the Roussele Punch Press.

DAVID J. ROSS CO.

15

Stick coupon on your letterhead and sign your name and title for information on Ace Welders.

PIER EQUIPMENT MFG. CO.

22

Stick coupon on your letterhead and sign your name, title and firm name for a catalog on Haskins Flexible Shaft Equipment.

R. G. HASKINS CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for information on Skilsaw Disc Sanders.

SKILSAW, INC.

23

Stick coupon on your letterhead and sign your name, title and firm name for information on the Hammond "CD" Disc Grinder.

**HAMMOND MACHINERY
BUILDERS**

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Stick coupon on letterhead or postcard and sign name, title and firm for full information on Oliver Drill Pointer.

OLIVER INSTRUMENT CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Rivett Spring Tempered Collets.

**RIVETT LATHE &
GRINDER, Inc.**

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Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Ball Bearing Grinders.

BALDOR ELEC. CO.

WELLS MFG.

31

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Metal Cutting Band Saws.

WELLS MFG. CORP.

25

Stick coupon on letterhead or postcard and sign name, title and firm for information on Wittek Roll Feeds.

WITTEK MFG. CO.

32

Stick coupon on your letterhead and sign your name, title and firm name for catalog No. 37 describing Ross Valves.

ROSS OPERATING VALVE CO.

26

Stick coupon on letterhead or postcard and sign name, title and firm for your catalog on Flexible Shaft Machines.

N. A. STRAND & CO.

33

Stick coupon on your letterhead and sign your name, title and firm name for information on the Micro-Precision Universal Jig.

HENDERSON & KAYE

27

Stick coupon on your letterhead and sign your name, title and firm name for information on the Rotor D-1 Buffer.

ROTOR AIR TOOL CO.

34

Stick coupon on letterhead or postcard and sign name, title and firm for catalog of Atlas Drill Grinding Attachments.

ATLAS PRESS CO.

28

Stick coupon on your letterhead and sign your name, title and firm name for information on the Miller Dual Control Welder.

MILLER ELECTRIC MFG. CO.

35

Stick coupon on letterhead or postcard and sign name, title and firm for full information on BASA Hammers & Reversible Ratchet Wrench.

GREENE-TWEED & CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Delta 17-inch 2 spindle Drill Presses.

DELTA MFG. CO.

36

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on the L-W Line.

L-W CHUCK CO.

30

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Tornado Cleaner.

BREUER ELECTRIC MFG. CO.

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WITTEK MFG. CO.
4305-9 W. 24th Pl.
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**WELLS MFG.
CORP.**
315 Seventh Ave.
THREE RIVERS, MICH.

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5001 N. Wolcott
Ave.
CHICAGO, ILL.

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**ROSS OPERATING
VALVE CO.**
6480 Epworth
Blvd.
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**ROTOR AIR
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CLEVELAND, OHIO

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& KAYE**
BATAVIA, ILL.

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DELTA MFG. CO.
691 E. Vienna Ave.
MILWAUKEE, WIS.

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**GREENE-TWEED
& CO.**
109 Duane St.
NEW YORK, N. Y.

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842 Blackhawk St.
CHICAGO, ILL.

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L-W CHUCK CO.
1-7 N. St. Clair St.
TOLEDO, OHIO

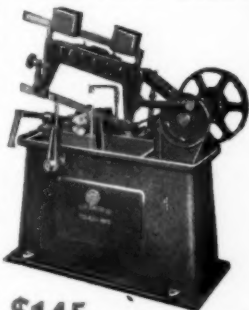
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L-W HIGH SPEED 6x6 POWER SAW

AN IDEAL SAW FOR ANY SHOP

The highest grade of material and workmanship is employed in the making of this heavy duty power hack saw. It is efficient and accurate in operation.

The saw frame is so designed that maximum rigidity is obtained. The sliding bearing is dovetailed to fit the arm and is adjustable in all directions. Automatic trip is provided which stops the machine on completion of the cut, also automatic relief of the saw blade on the non-cutting stroke. To make a clean and compact assembly, the coolant pump is mounted inside the base. Capacity 6"x6" with 10" to 14" blades.



\$145

Weight 460 lbs.

**Gravity feed Length gauge
Expanding clutch
Automatic stop
Dovetailed saw frame
Automotive relieving device
Fast and accurate**



New Feature ! Automotive Releasing Device

To start cut, relieve weight of saw frame, hold down on release lever and lower saw to work—then start machine. The rest of the operation is automatic.

L-W also manufactures magnetic chucks, lathe chucks, demagnetizers, vises and dividing heads. Send coupon No. 36 for a catalog of the complete L-W line.

L-W CHUCK CO.

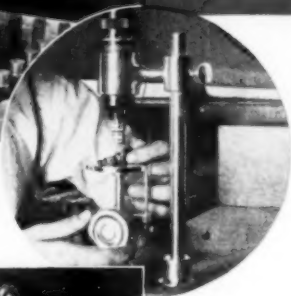
1-7 N. ST. CLAIR ST.,

TOLEDO, OHIO

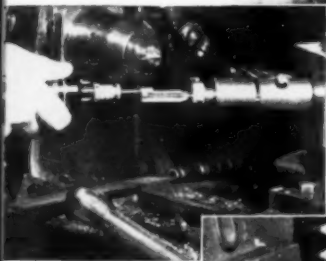
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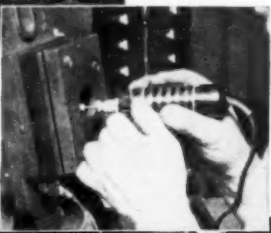
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any position
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die, even when set on
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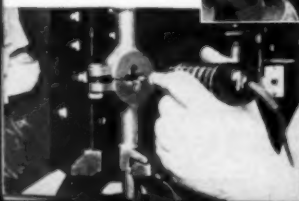
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For making, s-
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on intricate machine parts,
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or its type and weight, 12
Speed, 25,000 r.p.m. It is
le; simply plug in any electric
110 volts, AC or DC.

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both, rapid, almost human re-
and the wide range of work
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\$18.50

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*Cut your
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SQUARELY IN TWO

PATTERN WORK
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THE NEW HOBART 40 VOLT Simplified" ARC WELDER

—which comes to you on 30 days trial...which has features many others leave off...which costs you less to operate...which handles either plain or coated rod with ease. The coupon below brings complete details. Hobart Bros., Box TB-97, Troy, Ohio. One of the world's largest builders of arc welders.

GET
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AT OUR RISK
TO PROVE
Profits



FREE!!

The booklet above tells of the many profitable uses of welding in large and small shops. Use Quickmail Coupon No. 51.

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Gentlemen: Please send me, without obligation, complete details on the new Hobart 40 Volt Arc Welder for use in _____

Also the complete catalog illustrated.

Name _____

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**WELDON TOOL
CO.**
321 Frankfort Ave.
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**MARSHALLTOWN
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MARSHALLTOWN, IA.

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**ANDERSON BROS.
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ROCKFORD, ILL.

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**MASTER MACH.
& TOOL CO.**
NORTH KANSAS CITY
MO.

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INDUSTIAL CO.**
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CHICAGO, ILL.

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& CO.**
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MALL TOOL CO.
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Ave.
CHICAGO, ILL.

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**RACINE TOOL &
MACHINE CO.**
1754 State Street
RACINE, WIS.

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**WHITNEY METAL
TOOL CO.**
ROCKFORD, ILL.

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VINCO TOOL CO.
7348 Central Ave.
DETROIT, MICH.

48

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Stick this coupon on your letterhead and sign name, title and firm for catalog of Marshalltown presses.

MARSHALLTOWN MFG. CO.

37

Stick coupon on your letterhead and sign your name, title and firm name for a catalog showing types of Weldon End Mills.

WELDON TOOL CO.

44

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Master Lathe Converter.

MASTER MACHINE & TOOL CO.

38

Stick coupon on your letterhead and sign your name, title and firm name for information on the Anderson Power Scrapers.

ANDERSON BROS. MFG. CO.

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Stick this coupon on your letterhead and sign. If you wish only one catalog, write "Valves" or "Mandrels" after your signature.

W. H. NICHOLSON

39

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Drill Jig Bushings.

ACME INDUSTRIAL CO.

46

Stick this coupon on a postcard and sign name, title and firm name to get catalog on Mall Power Tools.

MALL TOOL CO.

40

Stick coupon on your letterhead and sign your name and title for a catalog of Scully-Jones Equipment.

SCULLY-JONES & CO.

47

Stick coupon on your letterhead and sign your name, title and firm name for information on the new Racine Utility Saw.

RACINE TOOL & MACHINE CO.

41

Stick coupon on letterhead or postcard and sign name, title and firm for information on automatic centering reels.

F. J. LITTELL MACHINE CO.

48

Stick coupon on letterhead or postcard and sign name, title and firm for circular on Vince Angle Dressers.

VINCO TOOL CO.

42

Stick coupon on letterhead or postcard and sign name, title and firm for a catalog on the Whitney line of tools.

WHITNEY METAL TOOL CO.

letterhead
title and
showing
Mills.
CO.

53

Stick coupon on letterhead or postcard and sign name, title and firm for information and prices on Colonial Bushings.

COLONIAL BUSHINGS, INC.

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Stick coupon on your letterhead and sign your name, title and firm name for catalog on Ettco-Emrick Tapping Attachments.

ETTCO TOOL CO.

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le and
on on
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CO.

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Stick this coupon on a postcard or letterhead and mail to receive a rivet price list and illustrations of Chicago Automatic Rivet Setters.

CHICAGO RIVET & MACHINE CO.

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Stick this coupon on your letterhead and sign name, title and firm for folder on the Super Speed Press.

SUPER SPEED PRESS CORP.

ed or
title
Drill

57

Stick coupon on letterhead or postcard and sign name, title and firm for information on the combination vise and drill table.

MODERN MACHINE TOOL CO.

51
Stick coupon on letterhead or postcard and sign name, title and firm for information on the Hobart Arc Welder.

HOBART BROTHERS

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nes

58

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Progressive End Mills.

PROGRESSIVE TOOL & CUTTER CO.

52
Stick coupon on your letterhead and sign your name and title for information on Haskins Air-Controlled Tapping.

R. G. HASKINS CO.

or
le
on

59

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Diamond-Grip Collars.

SUTTON TOOL CO.

53
Stick coupon on your letterhead and sign your name, title and firm name for your copy of the booklet on Pullmore Clutches.

ROCKFORD DRILLING MACHINE DIV. BORG-WARNER CORP.

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Stick this coupon on a postcard or letterhead to receive data on the Precision Tool Head.

PRECISION TOOL CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for your new Catalog on Federal Test Indicators.

FEDERAL PRODUCTS CORP.

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ETTCO TOOL CO.
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BROOKLYN, N. Y.

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**COLONIAL
BUSHINGS, INC.**
DETROIT, MICH.

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**SUPER SPEED
PRESS CORP.**
55 Liberty St.
NEW YORK, N. Y.

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**CHICAGO RIVET
& MACHINE CO.**
1855 S. 54th Ave.
Cicero P. O.
CHICAGO, ILL.

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**HOBART
BROTHERS**
Box TB-97
TROY, OHIO

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**MODERN MACH.
TOOL CO.**
JACKSON, MICH.

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R. G. HASKINS CO.
4654 W. Fulton St.
CHICAGO, ILL.

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**PROGRESSIVE
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CUTTER CO.**
FERNDAL, MICH.

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MACHINE DIV.**
BORG-WARNER CORP.
410 Catherine St.
ROCKFORD, ILL.

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TOOL CO.**
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DETROIT, MICH.

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**FEDERAL
PRODUCTS CORP.**
1144 Eddy St.
PROVIDENCE, R. I.

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**PRECISION
TOOL CO.**
BRIDGEPORT, CONN.

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**HANNIFIN
MFG. CO.**
621 S. Kolmar Ave.
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**PUTNAM TOOL
CO.**
2983 Charlevoix Ave.
DETROIT, MICH.

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LINLEY BROS. CO.
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**FEDERAL PRESS
CO.**
ELKHART, IND.

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**ROBBINS ENG.
CO.**
639 Mt. Elliott
DETROIT, MICH.

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**BANNER MFG.
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CHICAGO, ILL.

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R & L TOOLS
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PHILADELPHIA, PA.

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INC.**
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CHICAGO, ILL.

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**CONTINENTAL
MACHINE
SPECIALTIES**
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MINNEAPOLIS, MINN.

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**ODIN UNIVERSAL
CORP.**
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CHICAGO, ILL.

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PRATT & WHITNEY
Div. N-B-P CO.
HARTFORD, CONN.

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**GALLMEYER &
LIVINGSTON CO.**
303 Straight Ave.
GRAND RAPIDS, MICH.

72

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PUTNAM TOOL CO.

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Stick coupon on your letterhead and sign your name, title and firm name for information on the 35-ton Hannifin Straightening Press.

HANNIFIN MFG. CO.

68

Stick coupon on letterhead or postcard and sign name, title and firm for full information on Federal Presses.

FEDERAL PRESS CO.

62

Stick coupon on your letterhead and sign your name, title and firm name for information on the Linley Vertical Bench Miller.

LINLEY BROTHERS CO.

69

Stick coupon on letterhead or postcard and sign name, title and firm for your copy of the Banner catalog of Cams.

BANNER MFG. CO.

63

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Magna-Sine.

ROBBINS ENGINEERING CO.

70

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Schmidt Marking Machines.

GEO. T. SCHMIDT, INC.

64

Stick coupon on your letterhead and sign your name, title and firm name for information on the R & L Turning and Boring Tool.

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71

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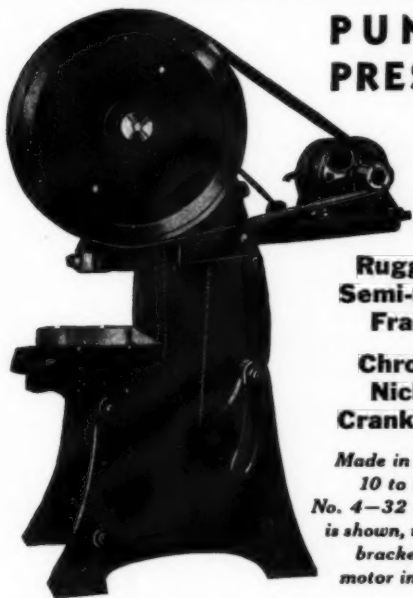
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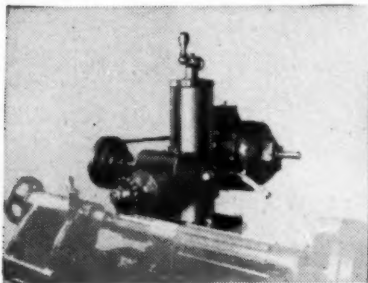
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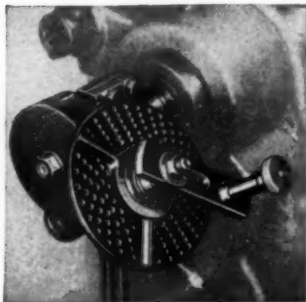


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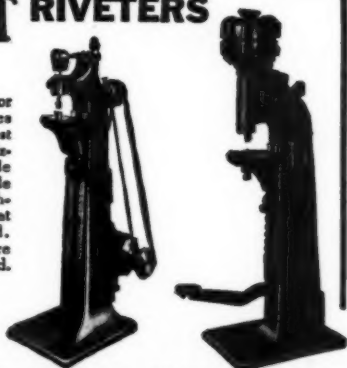
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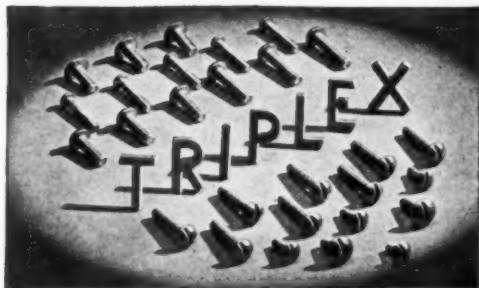
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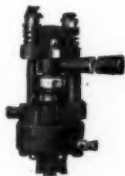
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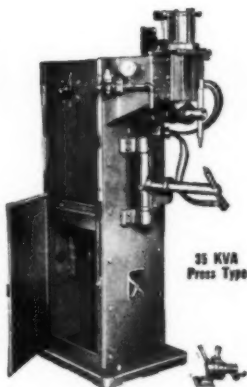
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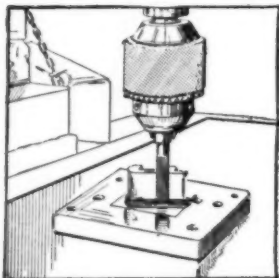
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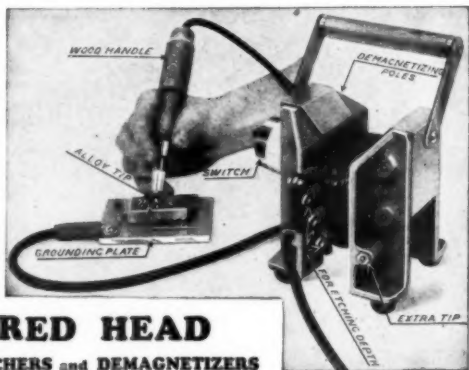
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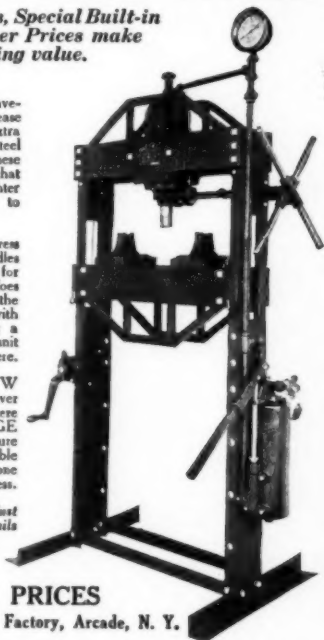
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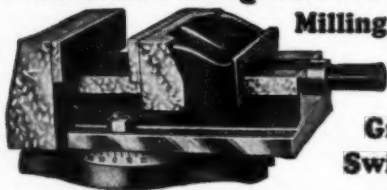
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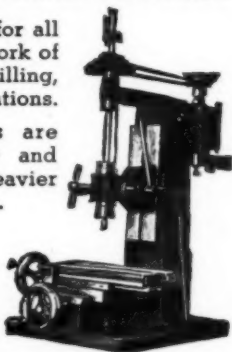
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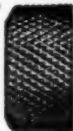
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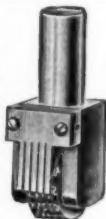


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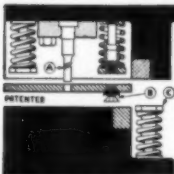
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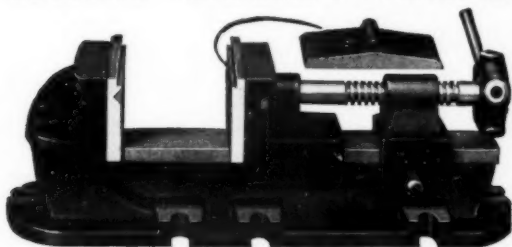
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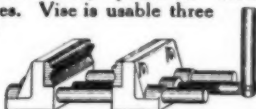
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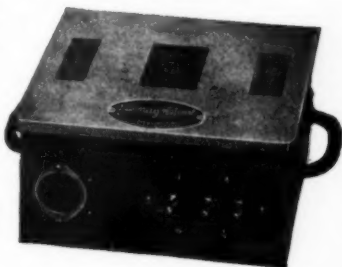
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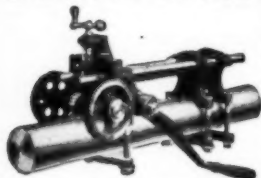
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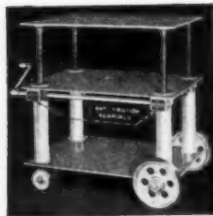
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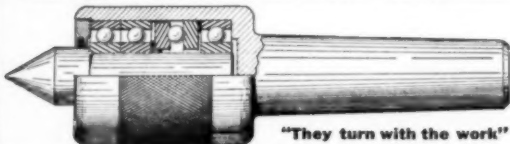


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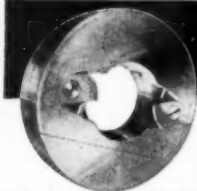


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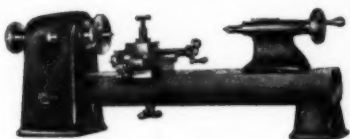
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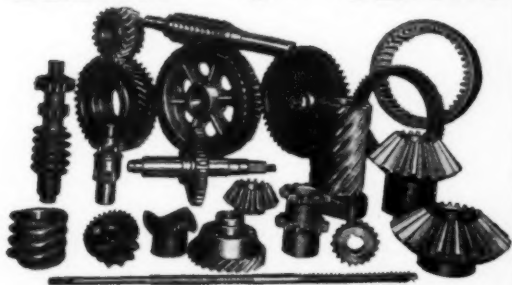
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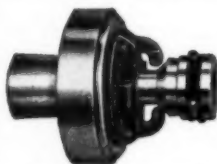
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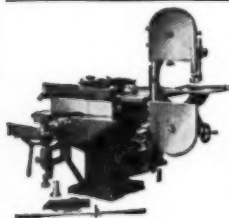
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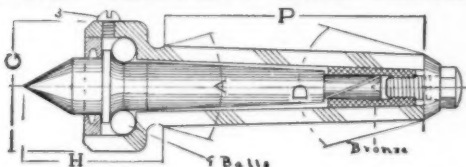


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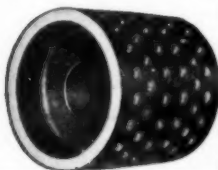
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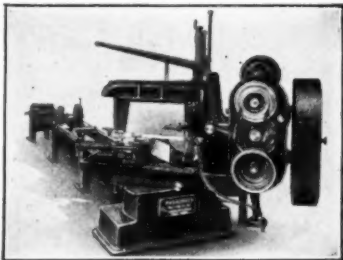
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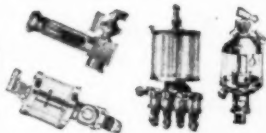
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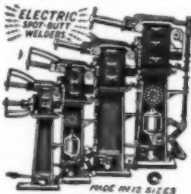
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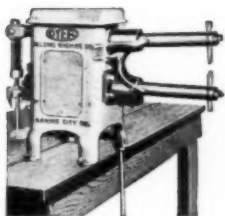
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Oliver Machinery Co., Grand Rapids, Mich.
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Skisaw, Inc., 3304 Euston Av., Chicago, Ill.

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Rickett-Shafer Co., Erie, Pa.

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Burs, Steel

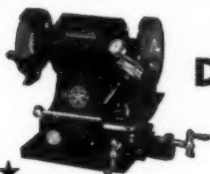
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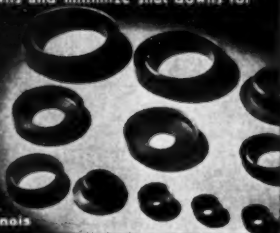
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Drill Jigs, Universal

Henderson & Kaye, Batavia, Ill.
Slawek Tool Co., Ferndale, Mich.

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Cleareman Mchs. Tool Co., Green Bay, Wis.
High Speed Hammer Co., Rochester, N. Y.
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Strand Co., N. A., 4301 N. Lincoln Street, Chicago, Ill.
Tanco Electric Motor Co., Leipsic, Ohio
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.
Wodack Electric Tool Corp., 4629 W. Huron St., Chicago

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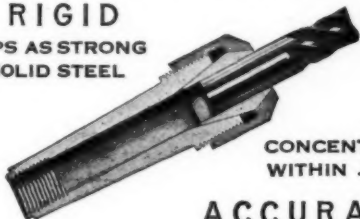
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Vince Tool Co., Detroit, Mich.

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Valley Electric Corp., St. Louis, Mo.

Grinders, Swing Frame

Vonnegut Moulder Corp., Indianapolis, Ind.

Grinders and Polishers, Belt

Oliver Machinery Co., Grand Rapids, Mich.
Royersford Foundry & Machine Co., Royersford, Pa.

Grinders, Tool Post

Wodack Electric Tool Corp., 4629 W. Huron St., Chicago

Grinding Attachments, Drill

Carlson Mfg. Co., C. H., Minneapolis, Minn.
Oliver Instrument Co., Adrian, Mich.

Grinding, Centerless (Contract)

Commercial Centerless Grinding Co., 6808 Carnegie Ave., Cleveland, Ohio
Industrial Centerless Grinding Co., Detroit
Porter Machine Co., Cincinnati, O.

Grinding Machines, Belt

Armco Co., Milwaukee, Wis.
Production Machine Co., Greenfield, Mass.
Wells Sales Corp., 96 Warren St., New York

Grinding Machines, Cutter, Reamer and Tool

Brown & Sharpe Mfg. Co., Providence, R. I.
National Machine Tool Co., Racine, Wis.
Oliver Instrument Co., Adrian, Mich.

Grinding Machines, Drill

Gallmeier & Livingston Co., Grand Rapids

Grinding Machines, Floor

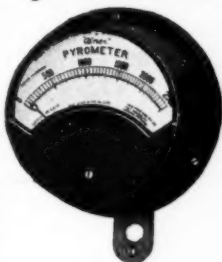
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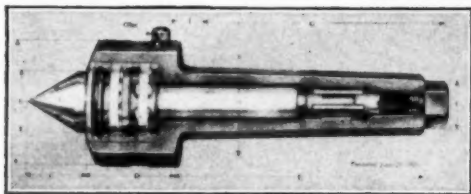
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National Machine Tool Co., Racine, Wis.
General Machine Works, Inc., 3906 Palmer St., Chicago

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Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill.
Dumore Co., Racine, Wis.
Haskins Co., R. G., 4654 W. Fulton, Chgo.
Mall Tool Co., 7742 S. Chicago Ave., Chicago
National Machine Tool Co., Racine, Wis.
Frost & Whitney, Hartford, Conn.
Strand Co., N. A., 5001 N. Lincoln St., Chgo.
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Grinding Machines, Surface

Gallmeyer & Livingston Co., Grand Rapids
Rogers & Co., Samuel C., Buffalo, N. Y.

Grinding Machines, Tap

Gallmeyer & Livingston Co., Grand Rapids

Grinding Machines, Tool

Hammond Machinery Builders, Kalamazoo,
Rogers & Co., Samuel C., Buffalo, N. Y., Mich.

Grinding Machines, Universal

Brown & Sharpe Mfg. Co., Providence, R. I.

Grinding Wheels

Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill.

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Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill.

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Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill.

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Hack Saw Machines

Armstrong-Bloom Mfg. Co., 5741 Bloomingdale Ave., Chicago
Boyersford Foundry & Machine Co., Boyersford, Pa.
Wells Mfg. Corp., Three Rivers, Mich.

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High Speed Hammer Co., Rochester, N. Y.

Hammers, Soft Faced

Greene Tweed & Co., 109 Duane St., New York, N. Y.

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W. H. Nicholson & Co., Wilkes-Barre, Pa.

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Wm. Carroll & Son, Norwood, Cincinnati, O.

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Indicators, Dial

Chicago Dial Indicator Co., 190 Wacker Drive, Chicago

Indicating Dials

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Indicators, Speed

Greene Tweed & Co., 109 Duane St., New York, N. Y.

Indicators, Surface Test

Reich Mfg. Co., J. E., Dayton, Ohio

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Hamilton Tool Company, Hamilton, Ohio
Hartford Special Mch. Co., Hartford, Conn.
Henderson & Kaye, Hattavia, Ill.
Slovak Tool Co., Ferndale, Mich.

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Rigid Tool Holder Co., Detroit, Mich.

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Hardinge Brothers, Inc., Elmira, N. Y.

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Lathes, Bench

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Delta Mfg. Co., Milwaukee, Wis.
Hardinge Brothers, Inc., Elmira, N. Y.
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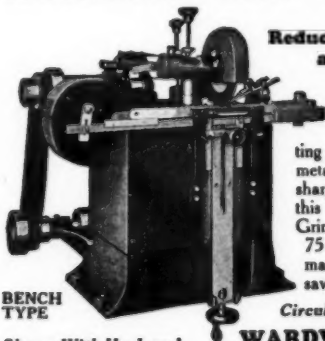
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South Bend Lathe Works, South Bend, Ind.

Lathes, Speed

Schauer Machine Co., Cincinnati, Ohio

Lathes, Toolroom

South Bend Lathe Works, South Bend, Ind.

Lathes, Turret

Jones & Lamson Mch. Co., Springfield, Vt.

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Norgren Co., C. A., Denver, Colo.

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Master Machine & Tool Co., North Kansas City, Mo.

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Hardings Brothers, Inc., Elmira, N. Y.

Milling Machines, Precision Bench

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Hardings Brothers, Inc., Elmira, N. Y.

Milling Machines, Hand

Burke Machine Tool Co., Connecticut, Ohio

Milling Machines, Plain

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Ridge Tool Co., Elyria, Ohio

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Greenard Arbor Press Co., Nashua, N. H.
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Wilson, K. R., Buffalo, N. Y.
- Presses, Bench**
Rockford Iron Works, Rockford, Ill.
- Presses, Broaching**
Greenard Arbor Press Co., Nashua, N. H.
- Presses, Foot**
Rockford Iron Works, Rockford, Ill.
Hogersford Foundry & Machine Co., Royersford, Pa.
- Presses, Forming**
Marshalltown Mfg. Co., Marshalltown, Ia.
- Presses, High Speed**
Super Speed Press Corp., 55 Liberty St., New York, N. Y.
- Presses, Inclined**
Federal Press Co., Elkhart, Indiana
Marshalltown Mfg. Co., Marshalltown, Ia.
Rockford Iron Works, Rockford, Ill.
Ross Co., David J., Benton Harbor, Mich.
- Presses, Power**
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Drele & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
Federal Press Co., Elkhart, Indiana
Rockford Iron Works, Rockford, Ill.
- Presses, Punch**
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Lewthwaite Mch. Co., T. H., 311 E. 47th, N. Y.
Marshalltown Mfg. Co., Marshalltown, Ia.
Ross Co., David J., Benton Harbor, Mich.
Super Speed Press Corp., 55 Liberty St., New York, N. Y.
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- Presses, Steel**
Allsteel Press Co., 12015 S. Peoria St., Chicago
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- Pulleys, Vacuum Cup**
Vacuum Cup Metal Pulley Co., Detroit
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Tomkins-Johnson Co., Jackson, Mich.
- Pumps, Lubricant**
Ruthman Machinery Co., Cincinnati, Ohio
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Modern Collet & Machine Co., Ecorse, Mich.

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White Dental Mfg. Co., 10 E. 40th Street,
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Delta Mfg. Co., Milwaukee, Wis.

Shafts, Steel
American Hollow Boring Co., Erie, Pa.

Shapers
Western Mch. Tool Wks., Holland, Mich.

Shaping Machines
Osborne & Sexton Mch. Co., Columbus, O.
Western Mch. Tool Wks., Holland, Mich.

Shears, Bevel
Marshalltown Mfg. Co., Marshalltown, Ia.

Shears, Hand
Armstrong-Blum Mfg. Co., 5741 Bloomingdale Ave., Chicago
Beverly Throatless Shear Co., 3007 W. 110th Place, Chicago, Ill.
Lewthwaite Machine Co., T. H., 311 E. 47th St., New York
The National Machine Tool Co., Racine, Wis.
Whitney Metal Tool Co., Rockford, Ill.

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Libert Machine Co., Green Bay, Wis.

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National Aluminum Co., Racine, Wis.

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**T. H. LEWTHWAITE
MACHINE CO.**

(Est. 1890)

311 E. 47th St., NEW YORK



Classified Finding Index

Tapping Attachments

Errington Mch. Lbh., Staten Island, N. Y.
 Kitzco Tool Co., Brooklyn, N. Y.
 Haskins Co., R. G., 4654 W. Fulton, Chgo.
 Proconer Safety Chuck Co., 14 S. Clinton
 St., Chicago, Ill.
 Western Mch. Tool Wks., Holland, Mich.

Tapping Jigs, Universal

Henderson & Kaye, Batavia, Ill.

Tapping Machines and Attachments

Burke Machine Tool Co., Conneaut, Ohio
 Cleerehan Mch. Tool Co., Green Bay, Wis.
 Kitzco Tool Co., 694 Johnson Av., Brooklyn,
 N. Y.
 Proconer Safety Chuck Co., 14 So. Clinton
 St., Chicago, Ill.
 Whitney Metal Tool Co., Rockford, Ill.

Thermometers, Resistance Type

Hillnola Testing Laboratories, Inc., 150 West
 Austin Ave., Chicago, Ill.

Threading Machines, Automatic

Grant Mfg. & Mch. Co., Bridgeport, Conn.
 Jones & Lamson Mch. Co., Springfield, Vt.
 Rickert-Shafer Co., Erie, Pa.

Threading Tools

Armstrong Bros. Tool Co., 808 N. Francisco
 Av., Chicago
 Ridge Tool Co., Elvira, Ohio
 Rivett Lathes & Grinders Inc., Brighton, Boston

Timing Instruments

Merlan, A. R. & J. E., 265 W. 40th St., N. Y. C.

Tool Heads, Universal

Precision Tool Co., Bridgeport, Conn.

Tool Holders

Armstrong Bros. Tool Co., 808 N. Francisco
 Av., Chicago
 Four Grip Tool Co., Paterson, N. J.
 Michigan Tool Co., Detroit, Mich.
 Rigid Toolholder Co., Detroit, Mich.
 Western Tool & Mfg. Co., Springfield, O.
 Zeigler Tool Co., Detroit, Mich.

Tools

Vinco Tool Co., Detroit, Mich.

Tools, Abrasives

White Dental Mfg. Co., 10 E. 40th Street,
 New York, N. Y.

Tools, Boring

Armstrong Bros. Tool Co., 808 N. Francisco
 Av., Chicago
 Gairing Tool Co., Detroit, Mich.

Tools, Lathes and Planer

Armstrong Bros. Tool Co., 808 N. Francisco
 Av., Chicago
 Four Grip Tool Co., Paterson, N. J.

Tools, Machinists'

Armstrong Bros. Tool Co., 808 N. Francisco
 Av., Chicago
 Brown & Sharpe Mfg. Co., Providence, R. I.
 Four Grip Tool Co., Paterson, N. J.

Tools, Multi-Diameter

Gairing Tool Co., Detroit, Mich.

Transfer Punches

McMahon Co., Frank, Dayton, Ohio

Tube Fittings

Essex Brass Corp., Detroit, Mich.

Tube Flanging Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Tubular Rivet Setters, Automatic Fd.

Chicago Rivet & Machine Co., 1865 S. 54th
 St., Cicero P. O., Chicago, Ill.

Tungsten Carbide Tools

Michigan Tool Co., Detroit, Mich.

Turning Tools

Banner Mfg. Co., 1873 Clybourn Av., Chgo.
 B & L Tools, Philadelphia, Pa.

Universal Drill Jigs

Henderson & Kaye, Batavia, Ill.

Universal Joints

American Tool Works, Inc., Hartford, Conn.
 Apex Machine Co., Dayton, O.
 Chicago Gear Works, 789 W. Jackson Blvd.,
 Chicago

Used and Rebuilt Machinery

Aaron Machinery Co., 176 Lafayette St.,
 New York City
 Abbott Tool & Equipment Co., 80 S. Clinton
 St., Chicago
 Adams Machy. Co., 124 S. Clinton, Chicago
 Belyea Co., Inc., 160 W. 18th St., New York,
 N. Y.

Bennet-Haskins Corp., 20 Church St., N. Y. N. Y.
 Bernstein & Co., Gen. M., 122, Clinton, Chgo.
 Blaser Mfg. & Mch. Co., Springfield, Ill.

Botwinik Brothers, New Haven, Conn.
 Bradley Machinery Co., Detroit, Mich.
 Brandt Mch. Sales, Pittsburgh, Pa.

Brown Machinery Co., St. Louis, Mo.
 Brownell Machinery Co., Providence, R. I.
 Burns Mch. Co., F. W., Milwaukee, Wis.
 Cincinnati Mch. & Supply Co., Cincinnati, O.

Clark Machinery Co., Cleveland, O.
 Clinton Mch. Co., 35 S. Clinton St., Chgo.
 Davis Machinery Co., Toledo, O.

Delta Equipment Co., Philadelphia, Pa.
 DeWitt Tool Co., 173 Grand St., N. Y. C.
 Eastern Machinery Co., Cincinnati, O.

Emmerman, Louis E. & Co., 1761, Elston
 Chicago, Ill.
 Ensey Machinery Co., E. L., 825 Rees St.,
 Chicago, Ill.

Falk Mill Supply Co., Inc., Rochester, N. Y.
 Foster Machinery Co., Cleveland, Ohio
 Ganey Machinery Co., Buffalo, N. Y.

General Blower Co., 601 N. Peoria St., Chgo.
 George, James W., Detroit, Mich.
 Goldman, Harvey H., Detroit, Mich.

Goldsher Machinery Co., 817 W. Lake St.,
 Chicago
 Great States Mfg. Co., Kansas City, Mo.

Hill, Clarke & Co., 845 W. Washington Blvd.,
 Chicago, Ill.
 Howarth Mch. Co., Inc., C. C., Detroit,
 Mich.

Hymen & Sons, Joseph, Philadelphia, Pa.
 Indianapolis Machinery & Supply Company,
 Indianapolis, Ind.

Industrial Mch. Co., Indianapolis, Ind.
 International Machinery Co., Detroit.
 Interstate Mch. Co., 199 S. Clinton, Chgo.

Iroquois Machinery Co., Buffalo, N. Y.
 Johnson & Sons Machinery Co., Wm. C.,
 St. Louis, Mo.

Jones Machine Tool Co., Cincinnati, Ohio
 Jones Mch. Co., Royal Oak, Mich.
 Kinsey Co., E. A., Cincinnati, Ohio

Lafayette Tool & Supply Co., 226 Lafayette
 St., N. Y. C.
 Lang Machinery Co., Pittsburgh, Pa.

Lucas, J. L., Bridgeport, Conn.
 McDonald Machinery Co., St. Louis
 Machinery Dealers, Inc., New Haven, Conn.

Marr-Gallbreath Mch. Co., Pittsburgh, Pa.
 Midwest Equipment Co., 625 W. Lake St.,
 Chicago, Ill.

Miles Machinery Co., Saginaw, W. S., Mich.
 Molitor Machinery Co., Charles L., 120 S.
 Clinton St., Chicago, Ill.

Morey & Co., 45 Mill St., Astoria, Long
 Island, N. Y.
 Norton Machinery Co., Cleveland, Ohio

Norton-Broadway Machinery Co., Cincinnati,
 Ohio
 O'Brien Machinery Co., Philadelphia

Ohio Mch. & Supply Co., Cincinnati, Ohio
 Ott Machinery Sales Co., Detroit, Mich.
 Osborne & Sexton Mch. Co., Columbus, O.

Prutton Mch. Co., D. H., Cleveland, Ohio

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Adjustable Angle Plate

For grinding any angle accurately.

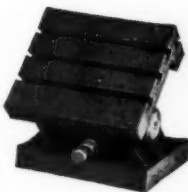
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Model "A" with T slots $3\frac{1}{2} \times 3\frac{1}{2}$...Price \$12.

Model "D" with tap hole $6 \times 7\frac{1}{2}$...Price \$30.

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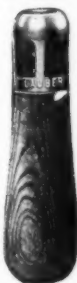
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New York City

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Die - Cast File Handles



- Heavy Ferrule die cast directly on hard wood.
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your present equip-
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RUSSELL BORING
BAR? Bore holes
from $9/16"$ to $12"$ dia.
with axis of boring bar
parallel to axis of the
shank, in one compact
tool, with micrometer
adjustment.

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Classified Finding Index

Used and Rebuilt Machinery—Cont.

Reliance Machinery Sales Co., Pittsburgh, Pa.
Rosenfeld Mchry. Corp., 950 W. Lake, Chgo.
Rosenkrantz & Weisbecker, 2309 A Singer Bldg., New York City
Scott-Hanbach Mchry. Co., 4907 W. 20th St., Chicago
Segal Machinery Co., 117 S. Clinton St., Chicago, Ill.
Service Co., Cleveland, Ohio
Shunk Mfg. Co., Bucyrus, O.
Simmons Machine Tool Corp., Albany, N. Y.
Standard Mchry. Co., Grand Rapids, Mich.
Strong, Carlisle & Hammond Co., Cleveland
Sun Machinery Co., Newark, N. J.
Surplus Material & Machinery Co., Detroit
Surplus Stock & Mchry. Co., Inc., 618 W. Lake St., Chicago, Ill.
Toledo Machinery Exchange, Toledo, O.
United Mchry. & Supply Co., St. Louis, Mo.
Victor Machinery Co., 130 S. Clinton Street, Chicago, Ill.
Victor Machinery Exchange, 251 Centre St., New York, N. Y.
Vine, R. A., Detroit, Mich.
Wain Mchry. Sales, Chas. E., Detroit, Mich.
Wertman Machinery Co., Cleveland, Ohio
West Penn Machinery Co., Pittsburgh, Pa.
White Mchry. Co., A. D., 108 N. Jefferson St., Chicago
Wiggleworth Machinery, T. R., Cleveland, O.
Wiggleworth Mchry. Co., Cambridge, Mass.

Vacuum Cleaners, Portable

Brewer Elec. Co., 846 Blackhawk St., Chgo.

Vacuum Cleaners, Industrial

Brewer Elec. Co., 846 Blackhawk St., Chgo.

Valves, Air

Ross Operating Valve Co., Detroit, Mich.

Valves

Galland-Henning Mfg. Co., Milwaukee, Wis.
Ross Operating Valve Co., Detroit, Mich.

Valves, Foot, Lever & Solenoid

Nicholson & Co., W. H., Wilkes-Barre, Pa.
Ross Operating Valve Co., Detroit, Mich.

Valves, Operating

Ross Operating Valve Co., Detroit, Mich.
Tomkins-Johnson Co., Jackson, Mich.

Vises, Combination Drill Table

Modern Machine Tool Co., Jackson, Mich.

Vises, Drilling Machine

Armstrong-Bloom Mfg. Co., 5741 Bloomingdale Ave., Chicago
Armstrong Bros. Tool Co., 908 N. Francisco Ave., Chicago
Diamond Stephan Mfg. Co., Urbana, Ohio
Graham Manufacturing Co., Providence, R. I.
L. W. Chuck Co., Toledo, Ohio
Martin Tool & Die Works, J. E., Springfield, O.
Modern Machine Tool Co., Jackson, Mich.
National Machine Tool Co., Racine, Wis.
Odin Universal Corp., 110 S. Dearborn, Chgo.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Yost Mfg. Co., Meadville, Penna.

Vises, Drill

Johnson Tool Co., East Providence, R. I.
Modern Machine Tool Co., Jackson, Mich.
Plunket Mchry. Co., 1823 W. Lake St., Chgo.

Vises, Machinists'

Diamond Stephan Mfg. Co., Urbana, Ohio
L. W. Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Western Tool & Mfg. Co., Springfield, O.
Yost Mfg. Co., Meadville, Penna.

Vises, Milling Machine

Graham Manufacturing Co., Providence, R. I.
Hartford Special Mchry. Co., Hartford, Conn.
L. W. Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Plunket Mchry. Co., 1823 W. Lake St., Chgo.
Sheldon Machine Co., 3255 Cottage Grove Ave., Chicago, Ill.
Yost Mfg. Co., Meadville, Penna.

Vises, Precision

Odin Universal Corp., 110 S. Dearborn, Chgo.

Vises, Shaper

Graham Manufacturing Co., Providence, R. I.
L. W. Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Plunket Mchry. Co., 1823 W. Lake St., Chgo.

Vises, Special

Modern Machine Tool Co., Jackson, Mich.

Welders, Arc

Hobart Brothers, Troy, Ohio
Lansko Electric Co., Cleveland, Ohio

Welders, Portable

Hobart Brothers, Troy, Ohio

Welders' Glass

Faulk, F. R., 405 Penn Av., Pittsburgh, Pa.

Welding Accessories

The Lincoln Electric Co., Cleveland, O.

Welding Electrodes and Holders

The Lincoln Electric Co., Cleveland, O.

Welding Generators, Arc

The Lincoln Electric Co., Cleveland, O.

Welding Goggles

The Lincoln Electric Co., Cleveland, O.

Welding Lens, Arc

The Lincoln Electric Co., Cleveland, O.

Welding Machines, Electric Spot

Armco Co., Milwaukee, Wis.
Kaiser Engineering Co., Inc., Newark, N. J.
Hobart Brothers, Troy, Ohio
Interstate Machinery Co., Chicago, Ill.
Pier Equipment Co., Benton Harbor, Mich.

Welding Machines and Equipment, E. I. Arc

The Lincoln Electric Co., Cleveland, O.

Welding Machines, Resistance

Armco Co., Milwaukee, Wis.
Kaiser Engineering Co., Inc., Newark, N. J.
Lincoln Electric Co., Cleveland, Ohio
Pier Equip. Mfg. Co., Benton Harbor, Mich.

Welding Rods

National Aluminum Co., Racine, Wis.

Wheel Rollers

Armstrong-Bray & Co., 315 N. Sheldon St., Chicago

Wheels, Grinding

Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill.

Woodworking Machinery

Tannetix Works, Grand Rapids, Mich.

Worm Drives

Michigan Tool Co., Detroit, Mich.

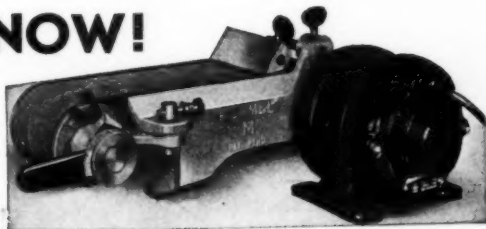
Worm Gear Motor Units

Star Mchry. & Eng. Co., Bloomfield, N. J.

Wrenches, Reversible

Greene Tweed & Co., 109 Duane St., New York, N. Y.

NOW!

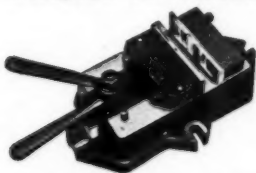


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The Hormel-M Grinder is sturdily built with a supporting leg under the grinding table to eliminate vibration and tipping due to pressure on belt. Ball bearing throughout, equipped with Alemite lubrication, complete with grease gun. Write for illustrated folder on this and other styles and sizes.

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Quick Opening—Tremendous Binding Power

Modern production milling work demands efficient aids. Thus, when the old type screw vise proved inadequate—a time and money waster—a large New England manufacturer developed the Hartford Milling Vise which affords the utmost in dependability, efficiency and economy. Its lower cam-faced handle gives you quick-opening and return, and the top eccentric lever handle exerts tremendous binding force. With little practice, both levers can be locked or unlocked with one hand.

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Toolholders, Expanding Mandrels,
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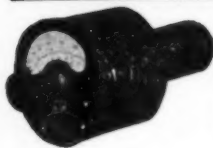
Tremendous capacity between the knees and shoulders of a man's height and in small floor space. No stooping, stretching or back-breaking. Very valuable in connection with supplying stock to automatic screw or parts-machines.

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STOP spoilage by getting the exact temperature of the work—not merely the heat of the furnace.

Direct reading; no calculations; no installation; no maintenance expense. Always ready to tell within 3 seconds any shortcomings in your equipment. Range 1000—3600° F. Bulletins on other PYRO Pyrometers sent on request.

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Used and Rebuilt Machinery Section

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus \$3.00 for name and address. Minimum charge, \$6.00. No display permitted.

Write directly to those offering the machines for sale, for prices and full descriptions. If what you seek is not advertised, use the enclosed printed form to make known your wants in either new or used machinery and the publisher will gladly pass them along to the advertisers.

FOR SALE BY

General Blower Co., - - - 401 N. Peoria St., Chicago, Ill.

BLOWERS—FANS—EXHAUSTERS.

For Dust Collecting — Ventilating.

Oil and gas burners, cupolas, furnaces, etc.

Roots—Connersville and centrifugal blowers.

What are your blower requirements?

FOR SALE BY

Brownell Machinery Co.,

150 Pine Street, Providence, R. I.

Boring mill, King 40", vertical.

Drill, radial, 2 $\frac{1}{2}$ ' Fostick cone.

Gear cutter, No. 14 Whiton S. & B.

Grinder, Walker rotary surface, 13" magnetic chuck.

Miller, No. 33 Kempsmith, 50".

Planer, 24"x24"x6" Whitcomb-B,

second belt drive.

Shaper, 20" G. & E., B. G.

Threading lathe, automatic, 13x8.

FOR SALE BY

J. Bleser Mfg. & Machy. Co., 16th & Madison St., Springfield, Ill.

Angle shear, Badger No. E-1.

Lathe, 36"x18' L. & S. arr. m.d. \$1500.

Lathe, 24"x16' Prentice..... 395.

Miller, No. 6 Transit.

Moulding mach., Internat'l, 26x8P.

Punch, Cleveland $\frac{1}{2}$ " thru $\frac{3}{4}$ ".

Radial drill, 7' Bement.

Switch panel, 2200 v. 100 h. p.

Trip hammer, 150 lb. Champion.

Valve refacer, B. & D. univ. m.d. \$50.

FOR SALE BY

Rosenfeld Machinery Corporation, 950 W. Lake St., Chicago, Ill.

Band saw, metal cutting, 6" Milband.

Blowers, No. 20 Connorsville, (2).

Broaching machine, 3B LaPointe.

Gear hobbors, No. 12 Barber-C., (3).

Hard'g furn. gas, with cyanide pot.

Hacksaws, No. 2 Marvel 6x6 Racine.

Hoists, 4ton Wrightspurgd., new (2)

Lathes, turret, Potter & J. 6A (4).

Mill, Becker vert. model C. S., s.p.d.

Shear, 6' Kuchard foot power.

FOR SALE BY

Aaron Machinery Co.,

176 Lafayette Street, New York, N. Y.

Bolt threaders, 2 Acme.

Drill, Allen 4 spindle, b. b.

Drill, upright, 20", 28", m. d.

Engraving machs, Gorton all sizes.

Grinder, Heald No. 55.

Keyseater, 3" cap., tilt. table.

Lathes, Hardinge bench.

Lathes, McCabe 2 spindle.

Miller, Becker vert., m. d.

Pipe machine, Landis 2" cap.

Press, Bliss 20-B power.

Shapers, American 16", 20".

USED AND REBUILT MACHINERY

FOR SALE BY

Scott-Bansbach Machinery Co., 4607 West 20th St., Chicago, Ill.

Automatic screw machines, B. & S., Nos. 00, 0, 2	\$450 to 1250.
Automatic screw machine, B. & S. No. 19 high speed, cap. $\frac{3}{8}$ " x $1\frac{1}{2}$ " b. d.	350.
Automatic screw machine, B. & S. No. 19 high speed, with motor	500.
Automatic screw machine, Cone, 1", 4 spdl., b. d.	1250.
Automatic screw machine, Davenport, $\frac{3}{8}$ " 5 spindle, b. d.	750.
Automatic screw machine, Gridley 4 spdl. Model F, 2 $\frac{1}{2}$ "	1000.
Automatic screw machine, Gridley, 4 spdl., $1\frac{1}{2}$ " Model G. and F.	600.
Automatic screw mche., Cleveland, $\frac{1}{2}$ " to $\frac{3}{4}$ " model A and B	\$250 to 450.
Automatic screw machine, Cleveland model "B", 2" cap., belt drive	300.
Air compressor, Curtis, 8"x8", capacity 80 to 110 cu. ft.	275.
Air compressor, Chicago Pneumatic, 10"x8", capacity 117 cu. ft.	280.
Buffer, 5 H. P. Hill Curtis, rite speed, tex rope drive	300.
Broach, Hercules Power, 15 ton, motor drive	400.
Drill, New Albany, h. s., motor drive, 110-60-1	100.
Drill, Leland Gifford, h. s., b. b. sensitive, $\frac{3}{8}$ " capacity	75.
Drill, Demco h. s., b. b., $\frac{1}{2}$ " capacity	110.
Drill, Allen, 14" H. S.-B. B. No. 2, M. T.	175.
Drill, 2 spindle Leland-Gifford h. s., b. b., sensitive, $\frac{3}{8}$ " cap.	150.
Drill, 2 spindle Leland-Gifford h. s., b. b., 14" No. 2 M. T.	250.
Drill, 3 spindle Avey, h. s., b. b. bench type on pedestal, $\frac{1}{2}$ " cap.	200.
Drill, 3 spdl., Leland-G., 24" swing, h. s., b. b., 12" travel. 26"x54" tbl.	500.
Drill, 4 spindle, Dwight-Slate, H. S., B. B., 16" swing No. 2 M. T.	325.
Drill, 4 spindle Demco h. s., o. b., 16" swing, $\frac{1}{2}$ " capacity	400.
Drill, 6 spindle, Avey, No. $\frac{1}{2}$, H. S. B. B., belt drive	600.
Drill, 20" Canedy-Otto, back geared, power feed	100.
Drill, No. 24, 24" Foot-Burt, heavy duty with tapping attachment	500.
Drill, gang, 3 spindle Barnes, 22 $\frac{1}{2}$ " swing b. g., p. f., No. 4, m. t.	275.
Drill, 21" Kokomo, hi-speed, sliding head, back geared power feed	275.
Drill, 24" Cincinnati-Bickford sliding head, back geared, power feed.	300.
Drill, 32" Mechanics, sliding head, back geared, power feed	350.
Gasoline engine, 10 h. p. Gray, automatic start	125.
Grinder, gear cutter, No. 23 Brown & Sharpe, 8" capacity	300.
Gear cutter, B. & S. No. 3, 26" for spur gears	300.
Gear hobber, No. 00 Pfauter, cap. 8" x6" x10 DP	100.
Grinder, 6" x32" Norton plain motor drive with motor	1000.
Grinder, 8" x20" Fitchburg, takes 17" automatic feeds, b. d.	400.
Grinder, surface, No. 2 B. & S. with mag. chuck, cap. 18" x6" x9 $\frac{1}{2}$ "	550.
Grinder, surface, No. 2 Diamond, cap. 10" x24", magnetic chuck, b. d.	600.
Grinder, Safety, surface, capacity 16" wide, 50" long, 12" high, belt dr.	500.
Grinder, Heald, No. 65, cylinder, 16" spindle and fixture	350.
Hammer, No. 1 $\frac{1}{2}$ B, High Speed, motor shelf, $\frac{1}{2}$ " capacity	100.
Hammer, No. 1 $\frac{1}{2}$ B, High Speed motor shelf, $\frac{1}{2}$ " capacity 12" gap	125.
Hammer, No. 3-A h. d., $\frac{1}{2}$ " cap. with motor	200.
Hammer, No. 4 A, High Speed belt drive, $\frac{1}{2}$ " cap.	200.
Hammer, No. 5A High Speed, motor shelf, $\frac{1}{2}$ " capacity	275.
Hammer, Bradley, 30 lb. compact belt drive	200.
Hammer, Bradley, 40 lb. rubber cushioned helve, belt drive	325.
Hammer, Bradley, 50 lb., upright strap, belt drive	400.
Hammer, Bradley, 60 lb., rubber cushioned strap, belt drive	500.
Lathe, Stark bench, 7" x30" $\frac{1}{2}$ " cap., c. r., s. r., c. s. and chuck	150.
Lathe, 13" x5' Monarch q. c., s. b. g., 4 jaw chuck taper att, rebuilt	300.
Lathe, 13" x5' Willard, semi q. c., d. b. g.	200.
Lathe, 13" x6' South Bend, standard change gears	200.
Lathe, 14" x6' Worcester semi q. c., with 4 jaw chuck	175.
Lathe, 14" x6' LeBlond, q. c., D. B. G. 4 jaw chuck, 16" swin.	350.
Lathe, 15" x5' South Bend, standard change gears	250.
Lathe, 15" x6' Springfield, q. c., b. g., taper attachment	325.
Lathe, 16" x6' Hendey, q. c., s. b. g., 3 and 4 jaw chucks	650.
Lathe, 17" x8' Cincinnati, semi q. c., d. b. g., with chuck	275.
Lathe, 18" x8' Davis, d. b. g., q. c., heavy duty	450.
Lathe, 18" x8' Walcott, q. c., d. b. g., taper att., 4 jaw chuck	650.
Lathe, 20" x8' Walcott, q. c., d. b. g.	550.
Lathe, 20" x8' Prentice, plain change with 3 chucks	150.

USED AND REBUILT MACHINERY

Scott-Bansbach Machinery Co.—Continued

Lathe, 24"x13' Dietz, Schumacker & Boye, plain change, with chuck.	300.
Lathe, 30"x13' H. S. & G. heavy duty, q. c., d. b. g. 16,000 lbs.	800.
Lathe, 18"x5' spinning, Grabo, 24" between centers	175.
Lathe, 22"x44" spinning gap, Prybil, 40"-76" between centers	350.

FOR SALE BY

Faylor-Strafer Machinery Co.,

Conveyor and chain, 360', 4" links.
 Drill, Amer. sens. radial with t. a.
 Drill, No. 121, Baker, h. p. cap. 14".
 Drill, 32" Cinn., s. p. gear box.
 Drill, 24" Hoeffer gang, 2 spdl.
 Drill, 9" Sipp, h. s., b. b. cap. 8".
 Gear grinders, P & W, 10" hel., spur.
 Grinder, No. 14 P & W. surface b. b.

136 Liberty St., New York

Lathe, 24"x12' Amer., g. h., s. p. d.
 Lathe, 3"x36" J. & L. bar & chuck g.
 Miller, No. 5 Becker, vertical.
 Miller, No. 5 Cinn. h. p. plain, rpt.
 Motor, G.E. 150 hp, 900 rpm. 440-60-3.
 Sq. shear, 30" Bliss, cap. 8".
 Sq. shear, 8'x14 ga. Geo. Ohl., b. d.
 Sq. shear, 42" Niagara, cap. 8".

FOR SALE BY

Lang Machinery Company, 28th St. & A. V. R. R. Pittsburgh, Pa.

Air compr., 12"x10" Chgo. "nsb" m. d.
 Aircom. Bury class "B" 810 c. f., m. d.
 Automatics (4) No. 5-A Potter & J.
 Automatics, Nos. 23, 24 & 33 N. B.
 Automatic, No. 52 National-Acme.
 Blower, No. 5 Sturtevant, 8 1/2" dis. b. d.
 Bor. mill, 30" Bullard, thrd. att., spd.
 Bor. mill, 76" Bullard, 2 Hds. m. d.
 Bor. mill, 84" Sellers, 2 hds. b. d.
 Boring mill, hor. 3" Rockford. tbl.
 Boring mill, 6" bar N. B. P. dbl. post.
 Bolt cutter, 1" Landis, sgl. hd., b. d.
 Bolt cutter, 1 1/2" Acme, sgl. hd., b. d.
 Bolt cutter, 3 1/2" Acme, b. d.
 Brake, leaf, No. 227 Dreis & K 12' x 8".
 Broach, No. 3 LaPointe, m. d.
 Buffer & pol. 5 H. P. AC Marschke.
 Drill, No. 124" Baker, cap. 2 1/2".
 Drill, rad. 2' Fosdick, t. a., b. d.
 Drill, radial, 2 1/2' Fosdick, s. p. d.
 Drill, radial, 4' Amer. enc. hd., m. d.
 Drills, rad. (2) 6' American, m. d.
 Drills, upright, 14" to 32".
 Drill, sens. 3-sp. Reed, b. d.
 Drill, 4 sp. No. 2 Foote-Burt, m. d.
 Drill, 16-spdl. No. 12 Pratt & W.
 Filing machine, No. 5 Thiel.
 Gear millers, No. 1 Bilton, b. d., (2).
 Gear miller, Standard, 4 1/2"x4 1/2", b. d.
 Gear shaper, No. 7 Fellows.
 Generator, C & C 450 amps. 73 v., d. c.
 Grinders, single and double end.
 Grinder, disc, dbl., 18" Diamond, b. d.
 Grinder, disc, No. 4 Gardner, 23" m. d.
 Hammer, 100 lb. Bradley, cush. hel.
 Hammer, forg. 5000-lb. Niles-B-P.
 Hammers, st. drop. 2000-6000 lb. Erie.
 Keyseater, No. 4 Mitts & M. b. d.
 Lathe, 14"x6' Carroll, q. c. g., b. d.
 Lathe, 16"x6' American, q. c. g., b. d.
 Lathe, 16"x12' Lodge & S. t. a., b. d.

Lathe, 24"x10' Bradford, p. c. g., b. d.
 Lathe, 26"x12' Bridgeford, q. c. g., b. d.
 Lathe, 30"x14' L. & S. q. c. g., m. d.
 Lathe, 36"x12' Bridge, grd. hd., q. c. g.
 Lathes, brass 18"x6' Amer. b. d., (2).
 Lathes, tur. No. 4 W. & S., b. d.
 Lathe, tur., 18" Libby type A, grd. hd.
 Lathe, No. 6 W. & S. grd. hd. m. d.
 Lineshafting-pulleys-hangers.
 Miller, plain, No. 2 Cincinnati b. d.
 Miller, plain, No. 2 1/2 LeBlond, b. d.
 Miller, plain No. 28 Ohio, b. d.
 Miller, plain No. 4 LeBlond.
 Miller, B. & S. tbl. 17"x72".
 Miller, univ. No. 1 Cincinnati b. d.
 Miller, univ. No. 2-B Hendey, b. d.
 Miller, univ. No. 3 Kempsmith, b. d.
 Miller, univ. (2) No. 3 Cincinnati, b. d.
 Miller, slab, 26"x26"x12' Ing., adj. r.
 Millers, vert. Nos. 3, 4-B & 6 Becker.
 Planers, 36"x36"x10' Cin., 2 hds.
 Planer, 42"x42"x10' Cincinnati, m. d.
 Planer, 42"x56"x10' Cin., 4 hds., m. d.
 Planer, 60"x48"x14' N.-B.-P. 3 hds. b. d.
 Press, No. 1-C standard, pedestal.
 Press, No. 0 Stiles, 1" stroke.
 Press, No. 4 Toledo, open back, 2" str.
 Press, o. b. i. No. 20 Bliss, 2" str.
 Press, No. 57 Toledo, forging.
 Saw, hack, 13"x16" Peerless, m. d.
 Shaper, 28" Queen City, b. g., b. d.
 Shaper, 24" Cincinnati, b. g., b. d.
 Shear, rot. No. 5-A & 6-A Quickwork.
 Shear, sq. 10'x3/16" Geo. A. Ohl. b. d.
 Shear, sq. 10'x3/16" Niagara, m. d.
 Straighteners, Shuster 6' & 12' x 4".
 Tapping machine, 10" Baker, s. p. d.
 Testing mach., 200,000 lb Olsen, m. d.
 Wiring & edging mch. No. 2 Magee.
 Welders, arc, 200-300 amp. Lincoln.
 Unishear, No. 0 36"x16 ga., m. d.

USED AND REBUILT MACHINERY

FOR SALE BY

Marr-Galbreath Machinery Co.,

55 Water St., Pittsburgh, Pa.

Air comp., 6x6"; 8x8"; 9x8" & 10x8".
Blower & exhaust, 4 1/2" outlet, 1/3 H. P. 1/80.
Bolt threader, 2 1/2" Landis dbl., m. d.
Boring mill, 42" Bullard, 1 swivel and 1 turret head, m. d., p. r. t.
Boring mill, N-B-P., dr., 2 columns, 6" bars, with separate milling hd., motors 220-v. d. c.
Boring mill, 30" Colburn, turret hd.
Boring mill, 30" Bullard VTL, threading attachment.
Brake, 4' x 10 ga. Robinson, hand.
Brake, 7' x 18 ga. Robinson, hand.
Brake, 8x22 ga. Double Truss hand.
Brake lining, punch and riveting machine, m. d.
Bulldozers, Nos. 24 & 25 W-W, AC, motors.
Compr., cent. 75 h.p. G.E., 3/60/220.
Crimping & corrugating machine, 10" x 16 Ga., Keene.
Crusher, No. 1 Williams Little G., b. d.
Die miller, Thurston-Schott, 650 lbs., Die sinker, No. 2 P. & W., r. t.
Drill, 24" Aurora, t. a., m. d.
Drill, 28" Superior, b. g., power fd.
Drill, No. 11-B, Natco, 16-sp., m. d.
Drill, rad., 2 1/2" Fosdick & Holloway.
Drill, radial, 3" Dresses, tapping att.
Drill, radial, 3 1/2" Canedy-Otto.
Drill radial, 4" Dreeses, gr. box m. d.
Drill, radial 6' Cin-Bick, DC motor.
Forging mch., 1 1/2" Acme; 2 1/2" Ajax.
Furnace, temp. & hardening 24x12x8".
Grinder, surf., Prod., 15x5" table.
Grinder, univ. T. & C. No. 2 Woods.
Grinder, univ. No. 3 Cin. 16"x48", m. d.
Grinder, pl. 11 B & S. 4x30" (cheap).
Grinders, univ. Bath 10"x36", mag. chuck 9x31".
Grinder disc, No. 2 Gardner, 20" wheels, m. d. 3/60/220.
Grinder, centerless, No. 2 Cin., for motor drive.
Hammer, power, 50 lb. Boss, b. d.
Hammer, power, 50 lb. Little Giant.
Hammer, 100 lb. Mayer, power.
Hammer, 200 lb. Beaudry, power.
Hammer, 400 lb. Bliss board drop, b. d.
Hammer, 800 lb. Erie SF steam or air.
Hammer, 1000 lb. Chamber's gt. drop.
Hammer, stm. drop, 1500 lb. (nr. new).
Hammer, Synton Elec., 1/60/110.
Hoist, chain, 4-ton triplex, Y. & T.
Keyseater, No. 2 Catlin, cap. 2" x 15".
Keyseater, No. 3 Mitts & M., belt.
Lathe, 11"x4' So. Bend, qcg, chuck.
Lathe, 12"x5' Hendey, gh. ta.
Lathe, 16"x12' L. & S., q. c. g., ta.
Lathes, 16"x7' National, q. c. g., (3).
Lathe, 18"x8' Superior, q. c. g., d. b. g.
Lathe, 20"x16' Johnson q. c. g., t. a., chuck.

Lathe, 22"x12' Rahn-Larmon, q. c. g.
Lathes, 42"x30" Bridge'd g. h., m. d.
Lathe, turret, No. 4 W. & S., bar feed, m. d., g. f. h. (2).
Miller, univ. No. 2 Cin., serial 2530-U.
Miller, No. 2 Brown & S. pl. cone.
Miller, pl., No. 15 Garvin, 42x10"x21".
Miller, No. 4 Ohio, table 101".
Pipe cutter, 3" Murchey, motor 3/60/440 v.
Pipe machine, 2" Robbins, bench, motor 1/60.
Pipe machine, 12" Cox, b. d.
Pipe machine, 12" E. C. & B., s. p. d.
Pipe machine, 18" Wieland, m. d.
Planer, 24"x24"x6' Gray, 1 head.
Planer, Gray, 56x48x10', 4 heads.
Polishing stand, 3 HP. U.S., 3/60/220.
Press, arbor 30 ton Lourie, Hyd.
Press 77 1/2" Bliss, T. R., 10" str. dbg.
Press, bench, No. 100-A. W-F., Wt. 275 lbs. (2).
Press, foot, I-A Bliss-Con. 400 lbs.
Press, OBI No. 2 Toledo, pl. 3 1/2" str.
Press, OBI No. 21 Bliss, 1" & 2" at. (3).
Press, No. 78 1/2" Bliss T. R., 10" str.
Press, Farrell D. C. bed 34x36" wgt. 13,700 lbs.
Press, P-3 Ferracune m. d. (3).
Press, or gang punch, No. 6 Nia. 48".
Press or shear, United ob., 3 1/2" shaft, m. d. (2).
Pump, cent. 700 GPM., 4" disc.
Pump, tripl., 1 1/2"x4" Worthington, b. d.
Punch, triple combination Pels 16, m. d.
Punch & shear, 25x24 U. Buffalo.
Punch and shear, No. 3 L. & A., 3"x3", 14" throat.
Punch and shear, No. 12 Badger combined, b. d.
Punch, & sh. hand, No. 3B. Beloit 5/16"x3".
Punches, hand No. 6 Kidder.
Punch & shear, S. E. Clev. "C" 20" tht.
Riveters, Shuster, 1" & 3/16", belted Riveter, No. 120 Grant, cap. 3", m. d.
Saw, No. 10 Racine 9x9", belted.
Saw, cold, No. 7 Espen-L., 15" belt.
Saw, cold, No. 1 Newton, 4 1/2" belt.
Shaper, 14" Steptoe, sbg.
Shapers, 14" Hendey, for m. d.
Shaper, 15" Springfield, sbg; belt.
Shaper, 15" Blount, friction type.
Shaper, 20" G. & E. b. g., m. d.
Shaper, 21" Smith & Mills.
Shapers, 16" 20" & 24" G. & E., cone.
Shaper, 24" Barker b. g. V-ram, b. d.
Shaper, 24" G. & E. motor 220-volt, d. c.
Shaper, 24" American b. g. crk., b. d.
Shear, angle 8x8x1 1/4" H & J. m. d.
Shear, angle. 6x6x1 1/4" Kling., m. d.
Shear, squaring, power 48" x14 ga.
Shear. Rotary 232 Bliss 14 ga.

USED AND REBUILT MACHINERY

Marr-Galbreath Machinery Co. -Continued

Shear, throatless 18-M Marshall-town, motor drive.
Shear, bar 3" United, 24" blade, m.d.
Shear, squaring, power 30"x18 ga.
Shear, squaring, power 42"x16 ga.
Steam turbines, 100h. p. 900 rev. (2).
Straightener, 4"x20" Shuster, cut-off.
Testing mach. 100 Ton Olson, com.
Tearing machines 600 & 1000 lb. hand.
Turret lathe, 18"x34" Libby, m. d.

Truck, Cowan Transveyor 5000 lb. hand.
Valve refacer, Kwik-Way, cabinet base, m. d.
Welder, Arc 300 amp. 3/60/220.
Welders, arc, 35 amp., transformer.
Welding & cutting generator, Carbic
Wheel press, 60 ton 34"x84", b. d.
Wheel press, 150-ton Caldwell, 54".

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Automatic, 24" B Cleveland, m. d.
Drill, Allen No. 2, excellent.
Drill, Rockford 26" adj. head.
Grinder, No. 2 B. & S. universal.
Grinders, No. 2 B. & S. surface (4).
Grinders, 10x50 Norton plain.
Lathe, Prentice 14"x8" g.h., q.c.g.

Miller, 1" Kempsmith plain.
Miller, Superior hand miller.
Miller, thread, No. 8 Lees Bradner.
Miller, thread 44"x12" P. & W.
Nibbler, No. 2 Campbell 24" m. d.
Saw, 8"x8" Atkins Kwi-cut.
Swager, No. 3 & No. 4 Langelier.

FOR SALE BY

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Dual Arc 300 amp. with Continental engine (1).
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General Electric 200-amp. A.C. (2).
U. S. L. 200-amp. A.C. (1).
Lincoln 200 ampere with 6 cylinder Packard engine (1).

Lincoln 300-amp., gas engine dr. (2).
Lincoln 200-amp., gas engine dr. (3).
Lincoln 400-amp., gas engine dr. (6).
Transformer type A. C. welders, 220-440 volt (7).
Westinghouse 200 amp. with Continental engine (1).
4-F.K.W. Lincoln 300 amp. a.c. dr.

We rebuild, buy and sell welders.

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The O'Brien Machinery Co., 113 N. Third St., Philadelphia, Pa.

Band saw, 42" American, V belt, m.d.
Boring mill, 100" N.B.P. mtr. dr. 103" swing, 82" under rail, rapid traverse.
Boring mill, 24" Bullard, rap. prod., threading attachment.
Crane, 36' Gantry, 20 ton, hand oper.
Drill, 6' Mueller radial, mtr. dr.
Drill, D2 Colburn, 3" cap.
Gear hobbess, 18" & 24" Gould & E.
Grinder, No. 103 Rivett, internal hole cap. 1/64" to 3".
Grinder, 12"x24" Modern cylindrical.
Hammer, 800 lb. Erie, steam forging.
Hammer, 1100 lb. NBP. steam forg.
Hammer, 2000 lb. Chambersburg double frame steam.
Lathe, 19"x8" Sidney, heavy duty, belt dr. quick change,

Lathe, 30x24 New Haven, belt.
Lathe, turret, 3A Warner & Swasey S. P. drive, cap. 34".
Miller, No. 3 LeBlond plain, belt drive, table 12"x60", quick chge.
Miller, No. 2 Kempsmith, plain, table 10"x45", belt drive.
Miller, No. 5 Cincinnati plain, table 76"x19", s. p. drive.
Miller, No. 2 B. & S Univ. late type, full equipment.
Miller, No. 3 Cinn. vertical, table 88"x134", SP dr.
Pipe machines, 2, 4, 6, 8 and 12" belt and motor drive.
Shapers, 14, 16, 20 & 24" various makes
Shear, 30" throat Quickwork rotary, 3/16" capacity.

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T. R. Wigglesworth Machinery

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Cleveland, Ohio

Auto, New Britain (x3) mod 2046 sp.
Auto, No. 53, 55, Nat'l. Acme ser.
12,000, many coll.
Boring mill, (2) 4" fl. tp. 14x16' plate
Boring mill 3" Lucas 3 s.c.
Drills, 5', 6' Amer. radial.
Drills, No. 4, 17 Foote Burt. 4 spd.
Drill, (2) No. 14 Colburn 2 sp, hvy.
Drills, (2) Sup sp Allen bb new '29.
Drills, 12-C Fox 8 sp m. d.
Grinders, No. 7 Springfield vert. sp
Grinders, No. 72 Heald Dup. Size.
Grinders, No. 28 Bryant ch, new 1931

Hammer, No. 2-B Nazel m. d.
Headers, No. 4 Ajax, 5" Acme m. d.
Lathes, 40"x30" Houston std Gambel.
Lathe, 30"x90" Bridgeford grd. hd.
Lathes, (2) 12"x18" Porter Cable
Mill mach., mod. K No. 1 Milw.
Univ. dial type.
Mill mach., (8) No. 12 B & S Mfg.
Mill mach., No. 2 Ryerson Con. grd.
Punches, No. 3, 6, 7, Hilles Jones.
Punches, No. 1, 2, 3, Long & Allist.
Tur. lathes, (2) No. 4 W & S pl. auto.
Tur. lathe, 26", 19" Libby Int. M. D.

FOR SALE BY

Surplus Material & Machinery Co.

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Punch press, No. 4 Niagara o.b.i.
Punch press, No. 20 B Bliss b. g.
Polishing lathes, No. 3 Gardner,
T & L pulleys (23).
Pipe cutter, Landis 4" cap.
Punch & shear, No. 52 Beliot.
Shear, No. 14 Canton Alligator.
Screw mch. 4" Cleveland auto.
Screw mch. No. 1, 2 & 4 B. & S. hand.
Shaper, 20" G. & E., c. d.
Shaper, 20" Smith & Mills, c. d.
Shaper, 16" Springfield, b. g.

Speed reducers, Palmer Bee (20).
Speed reducers, Reeves Dr. size
0 & 00.
Screw press, Jarecki.
Threader, No. 4 Geometric with hds.
Tappers, No. 1, 2 & 2x.
Tapper, Rickert Shafer, vert.
Tumbling barrels, Globe No. 16 & 18.
Welder, Gibbs seam 50 k. w.
Water pumps, Viking 1 1/2" in and
outlet (20).

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Brown Machinery Co.,

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Brake, Chicago Steel, 8' 18 gauge.
Drills, 14, 16, 20, 22, 24 & 42"
Drill, rail, Foote-Burt, 4-spindle.
Drills, 16 & 20 spindle Natco.
Grinders, cylinder, Madison, No. 65
Heald.
Grinders, cylindrical, 12"x42" and
10"x30" Landis, 14x72" Norton.
Grinders, disc, No. 6-20 Besly; No.
220 Badger automatic.
Hammers vert. 40 lb. Perfect and
Bradley, 120-lb. Kane & Roach.
Lathes, 26"x12" Putnam, taper att.;
18"x8" Rahn-Mayer; 18"x8" L. &
S., pat. head; 16"x6" Bradford.
Millers, plain, No. 3 Kempamith;
No. 2-B Milwaukee; 3 1/2' Fox;
3-B Owen.
Millers, universal, No. 2 Hendey-
Norton; Lincoln type, No. 4
Hendey; slab, Briggs type No. 11.
Planer, 42"x42"x18' Putnam, 3 hds.

Planer, 26"x26"x6' Whitcomb.
Presses, straightside, No. 7 Zeh &
Hahnmann, S. S., SG81 Ferrac-
cute, grd., dbl.
Press, 300-ton hydraulic.
Presses, o. b. i. Nos. 1, 2, 3, 4
Loshbough-Jordan; V & O No. 01.
Punches, sgl. end, Cleveland "C"
26" thr. 1/2" in 1/2"; Rock River Style
L rapid action, 24" thr. 1/2" in 1/2".
Punch & shears, dbl. end, No. L-10
Badger 16" thr. 1/2" in 1/2".
Riveters, No. 5A High Speed 1/2" cap.;
Grant 1/2" 18" throat, M. D.
Saw, cold, Higley No. 14.
Screw machines, No. 2 1/2' P. & W.;
1x15" P. & W.
Shapers, 16" Barker; 20" Smith &
Mills; 20" Cincinnati.
Shear, rotary bevel, 1/2" Lennox.
Shear, squaring, 10' Stark.

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Air compressors, 30 to 2500 cu. ft.
 Bearer, Yoder, 12 ga. m. d.
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 Bolt cutter, Acme 2", belt drive.
 Bor. mills, 24" Bullard New Era.
 Boring mill, 42" King, b. d.
 Boring mill, 60" Colburn, 2 hds., spd.
 Boring mill, 62" Betts, 2 heads, b. d.
 Boring mill, 14", b. d.
 Bor. mill, hor. 5" bar Barrett, m. d.
 Brake, 7' x 10 ga. D. & K. m. d.
 Bulldozers, Nos. 2, 4, 6, 9, 23, & 30.
 Crane, 5 ton Case, 55' 3" span.
 Cranes, Electric Traveling.
 Crane, crawler, gas., No. 2 No'wes.
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 Drill, rad. 5" Cincinnati-Bick., m. d.
 Drill, radial, 5" American, s. p. d.
 Drill, rad. 6" Reed-Prentice, s. p. d.
 Drill, mult. 24 sp. No. 30 Natco.
 Drills, upright 10" to 36".
 Drill, press, 6 spindle Allen.
 Engine, gas, 30 h. p. Bessemer.
 Flanger, McCabe, 1/2" capacity, dies.
 Gear cutters, 11", 15" & 24" Gleason.
 Gear tester, bevel 18" Gleason.
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 Grinder, disc, No. 8-20" Besly, b. d.
 Grinder, disc, No. 4 Gardner, m. d.
 Grinder, 12x24" Landis univ.
 Grinder, surface 8" Heald.
 Grinder, sur. 14" Pratt & W., m. d.
 Grinder, surf. Diamond, table 48x16".
 Grinder, int. No. 60 Heald, b. d.
 Hammer, power, 50-lbs. Blacker.
 Hammer, power, 90-lb. Justice, b. d.
 Hammer, pwr., 100 lb. Brad. cush.
 Hammer, Brad. 500 lb. upright.
 Hammers, Nos. 2-B, 3-B, 4-B, Nazel.
 Hammers, steam, forging & drop.
 Keyseater, No. 2 M & M, b. d.
 Lathe, 11' x 5' Meyers, p. c. g., b. d.
 Lathe, 18' x 8", S-B b. d.
 Lathe, 18' x 8", L. & S., b. d.
 Lathe, 20' x 10", Draper, b. d.
 Lathe, 22' x 12" R-L q. c. g., d. b. g.
 Lathe, 24' x 15" Prentice, grd. hd.
 Lathe, 42' x 16" S. B., q. c. g., b. d.
 Lathe, 42' x 30" Bdgrd. grd. hd.
 Lathe, roll, 18' x 14".
 Lathe, spinning 32" b. d.
 Lathes, turret, No. 4 W & S, b. d.
 Lathe, turret, No. 6 W & S, grd. hd.
 Lathes, No. 2 W. & S. turret, b. d.
 Lathe, turret, No. 1A, W. & S., m. d.
 Lathe, wheel, 42" Niles, m. d.
 Miller, vert. No. 6 Becker, m. d.
 Miller, B. & S. Universal No. 4 b. d.
 Motors, a. c. & d. c.

Nut tapper 8 sp. 1" National.
 Pickler, 4 arm Mesta, 10' radius.
 Pipe machs., 2 to 12", m. d.
 Planer, 36x36x10" Cincin. b. d.
 Planer, 42x42'x12" Cinc., 3 hds., b. d.
 Press, No. 20B Bliss, OBI.
 Press, No. 20C Bliss, OBI.
 Press, No. 5 L. & J. OBI.
 Press, No. 3 Bliss, Stiles type.
 Press, cam, No. 69N Bliss, dbl act. inc.
 Press, horn., No. 43 Toledo 14" str.
 Press, No. 93-B Toledo, b. d.
 Press, hyd. 100-ton Southwark.
 Press, hyd. 200-ton Oilgear.
 Press, No. 85 Toledo, bed 20x19.
 Press, No. 57 Toledo, 32"x32", str. 6".
 Press, sgl. crank, No. 77 Bliss, bd.
 Press, No. 78 Bliss, str. 10" tie rod.
 Press, dbl. crank No. 5 Bliss, 3" str.
 Press, gap, No. 74 Bliss consolidated.
 Press, screw, No. 87 Niagara.
 Press, wheel, hyd. 300 ton Niles.
 Press, 6 spindle, W-F.
 Punch, Rock River, 1/2"-1".
 Punch, EF Cleveland, 36" thrt., 1 1/2"-1".
 Pumps, Cent. 6", 4", 1", m. d.
 Riveters, air, hammer, spinning.
 Rolling mill, cold 9"x15".
 Saws, friction, Nos. 2, 3 & 4 Ryerson.
 Saw, cold, 48" Newton.
 Saw, hack, Peerless, 42x44".
 Saw, hack, Racine 6x6.
 Saw, hack, Racine, 12x12.
 Saw, hack, Peerless, 13"x16", m. d.
 Scale, sheet bundling, 2500 lbs.
 Shapers, 16", 20", 24" & 36" G. & E.
 Shears, alligator, 14", 2", 3" & 6".
 Shear, angle 6x6x1/2", Cleveland.
 Shear, circle, Niagara, 4" cutters.
 Shear, circle No. 3 Bliss, 40"x20 ga.
 Shear, bar 14", New Doty.
 Shear, bevel, Lennox 1/2", b. d.
 Shear, plate, No. 6 H & J, 10"x1/2".
 Shear, plate, No. 6 H & J, 72"x1".
 Shear, sq., No. 662 Nia., 62"x10 ga. bmd.
 Shear, sq. No. 48 Exc. 14 ga. bis. 53".
 Shear, sq. 10"x16 ga. Streine.
 Shear, sq. 11"x10 ga. Niagara, m. d.
 Shear, plate, 80"x4" Pels.
 Shear, sq., 16 ga., No. 152 Niagara, bd.
 Shear, rotary 24" thrt. cap. 1/2", m. d.
 Shear, Buffalo all steel 2" sq. m. d.
 Slotters, 6" Newton, 8" & 21" Betts.
 Slotter, 24" Newton, motor drive.
 Straightener, 42" Aetna std. 17 roll 3 1/2".
 Straight'r, 48" Aetna-Std 17 roll 3 1/2".
 Straightener, Shuster, 12"x1".
 Straightener, 14", 4" rd. Abramson.
 Straightener, No. 5 K. & R., b. d.
 Tumbling barrel, 34"x45", b. d.
 Upsetters, 1" to 6".
 Welder, 40 kw. Thom. 2 pcs. 1".
 Welder, butt 1 1/2" Winfield.

USED AND REBUILT MACHINERY

FOR SALE BY

Standard Machinery Co., 347 Indiana Ave., Grand Rapids, Mich.

Automatics, B. & S. No. 00, No. 0.
Automatic, 14" Gridley Model F.
Boring mill, 42" Bullard vertical.
Boring mill, 24" Lucas horizontal.
Drill, 20" Hoefler 4-spindle gang.
Drill, Baker 3" heavy duty.
Furnaces, Detroit Electric (4).

Lathes, 9" Porter-Cable Mfg.
Lathe, 24"-42"x12' Fifield c. h.
Miller, model C-1 Becker hvy. vert.
Pipe machine, 8" Williams.
Presses, Waterbury Farrel S. S.
7" shaft, 30" between uprights (2).
Welder, No. 259A12T. Gibb spot m. d.

FOR SALE BY

International Machinery Co., 3178 Bellevue Ave., Detroit, Mich.

Drill presses, 21", 24", Cincinnati.
Drill presses, No. 242 Camel Back, Barnes.
Drill presses, No. 263 Camel Back, Barnes sliding head.
Drill presses, 1, 2, 3, & 4 spindle Leland & Gifford hand & pwr. fd.
Grinder, No. 70 Heald internal, m. d.
Grinder, No. 2 Brown & S. univ.
Grinder, No. 22 & 25 Heald Rotary

Grinders, No. 2 B & S plain, s. p. d.
Lathe, 16x8 geared head Monarch, motor in base.
Miller, No. 2B Milwaukee universal double overarm m. d.
Miller, No. 2 Van Norman.
Miller, 18" & 24" Cincinnati duplex widened pattern.
Miller, 6x24 & 6x60 H & W thread.
Shapers, 16" and 24" G. & E., m. d.

FOR SALE BY

Davis Machinery Co., St. Clair & Washington Sts., Toledo, Ohio

Compressors, 6x6 & 8x8 Curtis twin vertical.
Drill, 36" Snyder sl. hd. back grd.
Drill, Avey 2 spdl. h. s., b. brg.
Drill, Allen 2 spdl. h. s., b. brg.
Drill, Colburn, No. 2 hvy. duty 4 spdl.
Grinder, Bath, universal, comp. att.
Lathe, 21"x10' LeBlond hvy. duty qcg
Lathe, 28"x12' Boye & E. q. c. g., t. a.
Mill, No. 2A Garvin univ. compl. c. p.

Mill, No. 3 Kempsmith plain, c. p.
Mill, No. 4 Cinc., hi. pwr. pl., c. p.
Mill, No. 4 LeBlond univ. arr. for m. d., comp. div. and vert. heads.
Press, 30 ton Lucas vert. forcing.
Press, No. 75 Toledo, o. b., flywheel.
Saw, 10"x10" Napier metal cutting.
Shaper, 20" Ohio crank, b. g.
Shaper, 24" Putter & Johnston univ.

FOR SALE BY

Ott Machinery Sales, Inc.,

Automatics, B. & S. Nos. 00, 0, 2, Cleveland Model A 7, 14, 24, & 44; Fay 14"x19"; Acme Nos. 53, 54, 55, and 76; Gridley 4 spdl. 1", 1 1/2", 1 3/4", 2", 2 1/2", 3", 4", 5", 6", 8", 10", 12", 14", 16", 18", 20", 24", 28", 30", 36", 42", 48", 54", 60", 66", 72", 78", 84", 90", 96", 102", 108", 114", 120", 126", 132", 138", 144", 150", 156", 162", 168", 174", 180", 186", 192", 198", 204", 210", 216", 222", 228", 234", 240", 246", 252", 258", 264", 270", 276", 282", 288", 294", 300".
Boring mills, Bullard 52" 2 swivel heads and 24" rapid production.
Drills, h. s., b. b. Henry & Wright No. 2, 2, 4 and 6 spindle.
Drill, rad. Bickford 5".
Gear shapers, Fellows Nos. 6.
Gear generators, Gleason 15" spiral bevel; roughers and finishers; Barber-Colman No. 3 and 12; Lees Bradner No. 1.
Grinders, Brown & S. No. 11, s. p. d. B. & S. Nos. 14 & 16 pl., m. d., No. 2 B. & S., surface; B. & S.

548 Second Ave., Detroit, Mich.

Univ., No. 3; Heald No. 50, 55, 65, 70, & 75; Lanis 10x36 plain s. c., m. d.; Norto 6x32, 10x36 & 14x50; Heim centerless, ser. No. 356.
Lathes, American G. H. 16"x6"; LeBlond 16x6; Flather, 16"x8" and 24"x10".
Lathes, turret, W. & S. No. 2A and 4 geared head; W. & S. Nos. 4 and 6 cone; J. & L. 2"x24" and 3"x36" dble. spdl. Steint 24"-64" hole.
Milling mchs., B. & S. No. 2B hvy. plain; Kempsmith Nos. 12 & 33 Mfg.; B. & S. No. 3 vertical.
Presses, Ferracute Pl. 2, 3, D G 53 and D D G4 cam; Bliss No. 29 arch; Metalwood 30 ton hyd.

Many more good tools. Your inquiries solicited.

USED AND REBUILT MACHINERY

FOR SALE BY

Joseph Hyman & Sons, - Tioga & Almond Sts., Philadelphia, Pa.

POWER PRESS SPECIALISTS

407A & 405B Bliss toggles, tie rod.
150 ton E52 Ferracute embossing.
600 ton No. 25K Bliss embossing KJ
500 ton American Can embossing KJ

No. 79½ Bliss, 16" stroke tie rod.
10'x½" shear gap. 15" Wais & Roos.
Shuster straight & cut off ½"x14'.
Hundreds of presses of various types.

FOR SALE BY

Foster Machinery Co. 3982 Bluestone Rd. Cleveland O.

Air compressor, 3x3½" Gardner.
Air compressor, 6"x6" Bury, tank
and gauges.
Bolt cutter, 14" Acme Class "A" with
USS & SA E dies.
Draw bench, 10,000 Pull 12' draw.
Drill press, 20" Rockford.

Drill press, 24" heavy duty Foote-B.
Riveter, No. 2-A h.d. High Speed m d
Riveter, 50 ton Hanna.
Saw, 6x6 Racine.
Scleroscope, Shore Model D.
Shaper, 16" Smith & Mills.
Spot welder, 10 KW water cooled.

FOR SALE BY

Belyea Company, Inc., 150 W. 18th St., New York, N. Y.

D. C. MOTORS

Adj. Speed—230 Volt

H. P.	MAKE	TYPE	SPEED
2-500	G. E.	MPC	180/350
1-400	West	Mill	450/600
1-400	G. E.	MPC	160/300
2-300	West	SK	150/300
2-200	G. E.	DMC	300/600
1-125	G. E.	DMC	150/300
1-125	West.	SK-210	225/900
8-120	G. K.	DMC	300/750
2-80	Diehl	K11-40	550/1100
1-75	G. E.	CD	575/870
3-75	Cr. Wh.	100 H	350/900
2-60	El. Dy.	25S	450/1200
5-60	El. Dy.	25S	525/1050
2-50	West	SK-190	225/600
12-40/50	Cr. Wh.	EM	175/700
1-40	West.		300/900
2-35	West.	SK	500/1500
12-20	G. E.	LC	650/1950
2-7½	G. E.	RF-10A	450/1800
12-7½	West.	SK-80L	400/1600
12-7½	West.	SK-70L	500/1500
14-5	West.	SK-70L	400/1500
10-3½	West	SK-40	450/1800

MOTOR GEN. SETS,

3-1250/1500 k. w. Westinghouse, 3
unit M. G. sets consisting of:
2-625/750 k. w. DC Gen. 125 v.,
600 RPM coupled on each end of:
1-1930 k. v. a. synch. motor, 2200
v. 600 rpm. 3 ph., 60 cy.
1-22½ k. w. type SK, 125 v., 600
rpm. exciter.
1-1000 k. w., G. E. type M. P. C.,
D. C. Gen. 250 v., conn. to 1400
h. p. type ATI, synch. motor,
6600/2300 v., 514 r.p.m. 3 ph., 60 cy.

250 KW G. E. 3 unit Synch. Motor
Gen. Set consisting of 2 125 KW
Interpole, DC, 125 V. generators
coupled on each end of 1-390 HP
Synch. Motor, 6600 V., 3 Ph., 25
Cy., 750 RPM.
2-250 KW G. E. DC Gen., 250 v.
conn to Synch. Motor, Type ATI,
2300 V., 720 RPM. 3 ph., 60 cy.

A. C. MOTORS—60 CYCLES Synch. Type

H.P.	TYPE	VOLTS	SPEED
1500	G. E., ATI	440/220	180
1000	West	2200	900
450	West.	440/220	257
350	Cr. Wh.,	720	2300/440
225	E. M. ch. 3 Brg	2300/4150	450
220	G. E., ATI	2300	900

SLIP RING TYPE

1500	West. CW	2200	440
850	West. CW	2200	710
500	Al. Ch.	2300/4000	500
450	West. CW	2200	875/700
400	G. E. MT424	4150/2300	390
300	Al. Ch ANY	2200	585
300	West. CW	1800	440/220
250	G. E. MT-424Y	4000/2300	257
250	F. Morse BV	2200	1200
250	West. CW	440/220	585
225	G. E.	440/220	1800
200	West CW	440/220	575
200	West. CW	2200/550	870

SQUIRREL CAGE TYPE

1-250	West. CS	2300/440	580
1-200	G. E. IK	550	600
1-200	West. CS876A	220/440	1160
1-100	G. E. IK15	440/220	720

USED AND REBUILT MACHINERY

FOR SALE BY

United Machinery & Supply Co., 1241 Walton Ave., St. Louis, Mo.

Brake, 10' 10 ga. D.&K., a.c., m.d.
Brake, 12' x 18 ga. Robertson, toggle.
Grinders, U. S., a. c., m. d. 18" & 24".
Miller, No. 6 Becker.
Miller, Whitney hand.

Rolls, 10' x 1/2" a. c. motor drive.
Seamer, 48" Niagara.
Shear, circle and flanging, 10 ga.
Shear, Lenox 1/2" cap. splitting.
Slitter, 38" x 18 ga., a. c., m. d.

FOR SALE BY

W. E. Brandt Mach'y. Sales, 50 Penn Avenue Pittsburgh, Pa.

Brake, 10' x 3/16" D.&K., press type.
Boring mill, 10' Niles, 2 heads.
Bulldozer, No. 4 Williams & White.
Forging machines, 2", 3", 5" Nat'l.
Forging machines, 2 1/2" Ajax.

Gear generator, 11" and 18" Gleason.
Keyseater, No. 2 Baker, 2" keyway.
Roll, bending 10' x 1 1/2" Cleveland.
Roll, bending, 8' x 1 1/2" H. & J. type.
Shear, 12' x 14 ga. Niagara (bargain).

FOR SALE BY

Goldsher Machinery Co., 817 W. Lake St., Chicago, Ill.

Boring mill, vert., 36" Niles, 2 hds.
Drill press, mult. spindle, National Acme.
Milling machines, No. 0 Rockford, No. 2 Hendey.
Lathes 12" and 16" Hendey, B. & S. and Pratt & Whitney.
Shapers, 26" Kelley, 16" and 24" G. & E.

FOR SALE BY

Wigglesworth Machinery Company

199 Bent Street, Cambridge, Mass.

Boring mill, No. 21 Lucas horizontal.
Boring mill, 42" King vertical.
Grinder, No. 14 P. & W. model B.

Grinder, No. 10 Brown & S. pl. m. d.
Lathe, 20" x 12' Monarch, grd. hd.
Saw, Avey Milband, 6" x 6" m. d.

Send for Complete Stock List.

FOR SALE BY

D. H. Prutton Mchy. Co., 5295 W. 130th St., Cleveland, Ohio

Automatic, Cleveland 1/2" model A.
Automatic, Cleveland 2 1/2" model A.
Chucker, 1/2" Cleveland model M automatic.
Drills, 1/2" cap. Demco 4 spindle, power feed, b. b. (3)
Gear hobbors, No. 0 and No. 1.

Schuchardt & Schutte.
Grinder, disc, No. 129 Gardner.
Tappers, (5) Webster & Perks 5 spindle vertical.
Press, No. 106 Bliss.
Press, cam drawing, No. 1 Bliss.
Presses, No. 4 & 5 Zeh & H. incl.

FOR SALE BY

Jones Machinery Co., Royal Oak, Michigan

Drill, No. 23 Foote-Burt, s. p. d.
Mill, No. 2 B. & S. plain., s. p. d.
Press, No. P-2 Ferracute m. d.
Press, No. P-3 Ferracute m. d.
Press, No. 15 Robinson horn. (2)
Press, No. 13 Niagara horn.
Press, No. 14 Niagara horn.
Press, No. P-13 Ferracute deep

throat horn.
Shaper, 24" Hollingsworth.
Shaper, 24" Gould & Eberhardt.
Shaper, 16" Smith & Mill.
Welder, projection 175 KVA Thomson.
Welder, spot, 47 KVA Taylor.
Welder, seam, 50 KVA Gibb.

USED AND REBUILT MACHINERY

FOR SALE BY

Chas. E. Wain Machinery Sales,

Grinder, No. 1 Cin. T&C \$ 75.
Grinder, 40" Knife..... 190.
Grinder, No. 11 B&S..... 235.
Tapper, No. 2 Garvin..... 150.

7800 Mack Ave., Detroit, Mich.

Reaming mach. Footburt..... 100.
Pipe threader, 2" Merrill..... 85.
Pumps for every service.
Collets—many sizes.

FOR SALE BY

E. L. Klauber Machinery Co.,

320-322 South Third St., St. Louis

Drill, duplex horizontal, Garvin.
Drills, bench precision, watch mfg.
Lathes, No. 1, 2, 3 & 4 Prec. bench.
Lathes, bch., watch manufacturing.
Lathe, 18x8 Duplex, 2 headstocks.
Lathe, 24"x12" wood turn. iron bd.

Millers, watch mfg. bench.
Millers, No. 1 Knight vertical.
Miller, 16"x55" Newton horizontal.
Press, straight side, 56 tons.
Saws, 4x4: 6x6 Marvel, Racine.
Shapers, 16"-18"-20" Ohio, American.

FOR SALE BY

Abbott Tool & Equipment Co.,

30 S. Clinton St., Chicago, Illinois

Drill, Moline type gang, 11 hds.
..... b. d. \$210.
Grinder, safety wheel, hvy. duty surf.
Grinder, Heald rot. surf. 34" dia. gen.
Lathe, 7"x32" Hardinge, late type.
dr. attachment.

Lathe, 20"x10" American, g. hd., m. d.
Lathe, 18"x8" Mueller, qc. dbg hvy. d.
Press, Bliss 73½, S. S., geared, m. d.
Rolls 10' corru., 24", & 1½" sgl. py. dr.
Shaper, 24" Milwaukee, b. g., b. d.
Welder, Omaha arc, portable.

FOR SALE BY

Reliance Machinery Sales Company

1405 Brighton Place, N. S.

Pittsburgh, Pa.

Air compress., 90 and 342 cu. ft. Ing.
Brake, press, 72" Rob. toggle m. d.
Brake and folder, 72" Niagara,
22 gauge, motor 3-60-220.
Bulldozer, No. 9 W.-W., 70,000 lbs.
Drill, 4 spindle Colburn, Mfg. type,
cap. 2", like new.
Drill, 25" J. Prentiss, tapping att.
Hammer, 80 lb. Brad. cushion helve.
Lathe, 14"x6" L. & S., g. h., taper.
Lathe, 20"x12" 6" Am., cone, taper.
Lathes, spinning, 30" Bliss & Tol.,
roller bearing.

Miller, No. 4 Cin., plain, cone.
Nibbler, No. 1 Gray 34" tht., 3/16"
capacity, m. d.
Press, Robinson dbl. cr., 80" wide,
4" shaft, grd. 3" stroke.
Saw, hack, 12"x12" Racine, m. d.
Shapers, 16", 20", 24", 25", crk.
Shear, double angle, 6x6x3/4" Clev.,
mounted on turnable, m. d.
Thread roller, No. 119 Bliss.
Welders, 300 and 400 amp. Lincoln,
motor end 3-60-220-v.

LOOKING FOR TOOLS?
Consult The Classified Finding Index
A BUYERS GUIDE!

High Grade Machine Tools

Lathes

42"x20' American Geared Head.
42"x18' Bridgeford Grd. Hd. S.P.D.
36"x14' Boye & Ennes, cone, q. c.
36"x20' Bradford cone, Loose Chge.
28"x48"x10' Harrington, Slid. Bed.
26"x14' Bridgeford Grd. Hd. S.P.D.
24"x10' Greaves Kluaman Grd. Hd.
S. P. D.
24"x10' American Grd. Hd. S.P.D.
16"x10' LeBlond 3 SCD,DBG,QC.

Grinders

16"x52" Landis self contained.
16"x48" Landis Crankshaft.
16"x48" & 72" Landis Crankshaft.
Type A Production Abrasive Finishing
Nos. 50, 55, 60, 65 and 70 Heads.
6"x18" Landis Plain, Self Contained.
10"x52" Landis Plain, Self Con.
Rivett Internal Grinder.

Gear Cutters

No. 3, 26" Brown & S. Gear Cutter.
Nos. 1, 2, 4 Adams Farwell Gear Hb.
18-H Gould & Eberhardt Hobber.
No. 6 Fellows Gear Shaper.
No. 3-36" B&S Gear Cutter.
No. 5-60" Newark Gear Cutting
Machine.

Bolt and Pipe Threaders

3/8" Landis Double Spindle Lanco Hds.
2" Landis Double-Spindle.

Boring Mills

42" Colburn Vertical Mill Rap. Trav.
36"-44" Niles-Bement-Pond Side hd.
Mill, Rapid Traverse.
42" Niles Boring Mills, 2 heads.
14' Betts, Cone Drive.
60" Niles Boring Mill, 2 heads.

Milling Machines

24" Cincinnati Automatic.
24" Cincinnati Duplex.
No. 4 Cincinnati High Pwr. Univ. S.P.D.
No. 2 & 3 Kemsamith Plain, M. D.
No. 3 LeBlond H. D. Plain.
No. 3 Kemsamith Universal.
5B Becker Vertical Mill.
5" Pratt & Whitney Automatic.
18" Cincinnati Plain Mfg. Miller.
Briggs Manufacturing Miller.
No. 7-H Becker Lincoln type.
No. 1 Knight Miller and Driller.

Planers

30"x30"x8' American two heads.
30"x30"x16' Gray, two heads.
24"x6' Ohio.
24"x24"x14' Gray, box table.
42"x42"x10' Cleveland Openside,
3 heads, A. C., M. D.

Radial and Upright Drills

24" Cincinnati Bickford Upright, tap.
2 1/2, 3, 3 1/2, 6' Cincinnati-Bick. S. P. D.
3, 3 1/2, 4 American Trip. Pur. S.P.D.
3' Bickford Plain, S. P. D.
No. 2 Colburn Mfg. H. D. 2-spindle.
No. 40 Natco Straight Line Multi.

Shapers

20" Ohio, motor driven.
16", 20", 24" Gould & Eberhardt
motor drive, thru gear box.
16", 20" and 24" G. & E., cone drive.

Miscellaneous

No. 3-B LaPointe Broaching Mche.
80lb. Bradley Cushion Helve Hammer
High Speed Riveting Hammers.
Nos. 1 & 3 Baker Keyseater Mches.
No. 2 Mitts & Merrill Keyseater.
Nos. 1 & 2 Davis Keyseaters.
V-18 Amer. Vert. Broaching Mche.
15, 30 & 50 Ton Lucas Forcing Pr.
96A Toledo Double Crank Press
No. 163B Consolidated Dbl. Crank.
No. 1 & 2-X Garvin Tapping Mches.
No. 4 W. & S. Univ. Turret Lathe.
Nice Variety of Sizes of Presses.

Write for Complete Catalogue—We Buy, Sell and Exchange

Cincinnati Machinery & Supply Co., 217 East Second St., CINCINNATI, OHIO

JOHNSON'S BARGAINS

30"x144" Landis cylindrical grinder with self contained countershaft

Air compressors, 30' to 2000'.
Bolt threader, Nat. 2".
Bolt threader, 2 heads, Nat. 1".
Boring mill, 36" King turret.
Boring mill, 51" Gisholt 2 heads.
Boring mill, 60" Colburn 2 heads.
Boring mill, 42" Colburn, (3).
Boring mill, No. 0 Barret.
Boring mill, hor. 4 1/2 bar Betts knee type.
Bulldozers, No. 3-4 and 8.
Drill, radial 3' Morris round column.
Drill, radial, 3' Reed Prentice.
Drill, radial, 4' Dreses.
Drill, radial, 5' Western very good.
Drills, 25 various, upright.
Drills, Moline hole hog.
Drills, No. 4 Quint turret.
Drills, Colburn D4.
Drills, Baker 24".
Flanging machine, 1/4" McCabe.
Furnaces, various sizes.
Gear cutter, 18" G. & E. hobber.
Gear cutter, 11" Gleason bevel gen.
Gear cutter, 24"x8" G. & E. 3 speed gear rougher.
Gearcutter, 12" Ingle tooth rounder.
Gearcutter, No. 6 Fellows gr. shaper.
Gearcutters, No. 1 & 3 Adams hobbess.
Grinder, No. 1 Wilmarth & M. univ.
Grinders, 13x66 Landis universal.
Hammers, 500 & 25 lb. Little Giant.
Hammer, 300 lb. Bradley.
Hammer, steam 4000 to 250 lb.
Hammer, 80 Perfect.
Keyseater, No. 2 M & M.
Lathe, 20"x12" Rahn and Larmon.
Lathes, 18"x8' L. & S. QCG cone.
Lathes, 18"x8' LeBlond QCG cone.
Lathes, 16"x10' Monarch QCG cone.
Lathes, turret, No. 3 & 7 universal
Bardons Oliver.

Lathe, 27"x14' LeBlond.
Lathes, 26"x12' Flather, q. c. g.
Lathe, turret No. 6 Woods, tilted.
Lathes, 3 Gridley 24", Model F., 4 sp.
Miller, Pratt & Whitney spline.
Miller, No. 4 Brown & S., plain.
Miller, No. 3 Hendey, plain.
Miller, Waltham thread.
Miller, No. 2 Kempsmith, univ.
Millers, No. 1 U. S. hand.
Millers, Ingersoll, 27"x24"x10'.
Planer, 36x36x12 W. & P., 2 heads.
Planer, 30x30x8 Cinn. 1 head.
Planer, 36x30x8 Cleveland open side.
Planers, 60"x48"x10' Gray, 2 heads.
Press, No. 91-C Toledo.
Press, No. 2-3 & 4 Marshalltown, o. b. i., new.
Presses, 68N and 65C Bliss.
Presses, hydraulic up push 18" dia. piston 36x28 bolster and pump.
Punches and shears, structural all sizes.
Saw, No. 14 Higley.
Saw, No. 2 Marvel.
Saws, 6x6 Acme.
Shaper, 16"-20"-24".
Shaper, 20" Flather, sgl. pulley dr.
Shear, 3' Niagara, 16 ga.
Shears, splitting 1/4" cap.
Shears, squaring Niagara 3', 12 ga.
Shears, 310 Niagara ring & circle 1/4".
Shears, 44" Bertach sq., 16 ga.
Seamer, double Bliss No. 5.
Straightening roll No. 2 H & J, new.
Woodworker-Yates-American 4 side moulder.
Woodworker-Yates-American belt sander.
200 electric motors and generators.
Gas, oil and steam engines.
1000 other tools available.

Wm. C. Johnson & Sons Machinery Co.
1211-1223 Hadley Street, St. Louis, Mo.

GOOD REB

BORING MILLS

- 42", 52" King Vertical, 2 swivel heads on rail, p. r. t., m. d.
 72" Gisholt Vertical, m. d., d. c. elec. equip., p. r. t.
 30" Bullard Vertical, 1 head.
 30" Gisholt Vertical, 1 head p. r. t.
 36", 42" Bullard Rapid Production 2 heads on rail.
 36" Colburn Vertical, 2 heads.
 37" Niles Vertical, 2 heads, m. d.
 51" Niles-Bement-Pond Vertical, m. d. thru gear box.
 2½ bar Cleveland Horizontal.

PUNCHES AND SHEARS

- Hilles & Jones Style J Single End 30" Open Throat H. D. Punch m. d. with 30 H.P., A.C. motor, capacity 4" hole thru 1½" steel. Speed 22 strokes per minute, has 3" stroke. Very late type practically new.
 Cleveland new EF Double End Punch and Shear, semi-steel frame, 1¼" thru 1", shear 1" plate, 48" throat both ends, m. d.
 No. 2 Badger State Alligator Shear, b. d.
 No. 24 Buffalo Armor Plate Slitting Shear, m. d.
 No. 465 Bliss Power Gap Squaring Shear 18" gap, cap. ¼" material 8' long.
 No. 4120 Stoll Power Squaring Shear, m. d., cap. 10" by ¾".

ROLLS

- No. 0 62" Hilles & Jones Plate Strt., Rolls, m. d., with A.C. motor, cap. ¾" material.
 74" Bertch Bending Rolls, belt drive cap. 5/16".
 90" Bertch, Bending Rolls, belt drive, cap., 10 ga.

- 12" Niles, Pyramid Type Bending Rolls, belt drive cap. 1½".
 20" Niles, Shipyard Type Bending Rolls, pyramid strong back type, steam engine drive, cap. 1" plate, weight 154,000 lbs.

GEAR MACHINERY

- 11" 16" Gleason Straight Tooth Bevel Gear Generators, belt.
 12" Gleason Bevel Gear Planer, belt.
 Nos. 3, 12 Barber-Colman Gr. Hobbers, b. d.
 No. 12 Barber-Colman Gear Hobber, double overarm, m. d.
 No. 3—26" Brown & Sharpe Gear Cutter, belt.
 No. 3—36" Brown & Sharpe Gear Cutter, belt.
 No. 5A Lees-Bradner Gr. Gener., belt.
 No. 3—26" Cincinnati Spur Gear Cutter belt.
 No. 6 Fellows Gear Shaper, belt.
 No. 18HM 2 spindle Gould & Eberhardt Gear Hobber, m. d.
 Hercules Gear Hobber, belt.
 Schuchardt & Schutte Gear Tooth Rounder, belt.
 12" Ingle Gear Tooth Rounder, belt.
 Gleason Cutter Grinder, belt.

LATHES

- No. 5 Center Drive Niles Car Wheel Lathe, m. d., A. C. motors, capacity 42"x96".
 42"x20" Putnam Geared Head, m. d.
 36"x29" Johnston, cone.
 36"x11" American, cone.
 30"x14" Lodge & Shipley Patent Head, s. p. d.
 30"x14" Lodge & Shipley, cone.
 30"x11" American, cone.
 25" raised to 32"x12" LeBlond, cone.
 24"x12" Schumacher-Boye, cone.

EASTERN MACHINERY CO.,

BUILT TOOLS

- 24"x12" LeBlond, cone.
- 24"x10" Boye & Emmes, cone.
- 24"x10" Greaves-Klusman, cone.
- 24"x10" American, cone.
- 24"x8" Hendey Yoke Head cone.
- 22"x10" L. & S., Selective Head, m. d.
- 20"x12" Lodge & S. Patent Head s.p.d.
- 20"x10" Hendey Yoke Head cone.
- 20"x10" Hendey Geared Head, m. d.
- 20"x10" Boye & Emmes, cone.
- 20"x6" Hendey Geared Head, m. d.
- 18"x10" Lodge & S. Patent Head, m. d.
- 18"x8" Schumacher-Boye, cone, taper.
- 18"x8" Lodge & Shipley Selective Head, s.p.d.
- 18"x8" Greaves-Klusman, cone.
- 17"x8" LeBlond, cone.
- 16"x14" Lodge & Shipley Selec. Head, m. d. taper.
- 16"x12" Prentice Geared Head, s. p. d.
- 16"x10" LeBlond, cone, taper.
- 16"x6" Hendey Yoke Head, cone, taper.
- 16"x6" Hendey Geared Head, m. d.
- 14"x6" Hendey Geared Head, taper.
- 11"x4" South Bend, m. d., bench type.

RADIAL DRILLS

- 3" 4" Fostick, gear box.
- 3" American, Triple Purpose, m. d. on arm.
- 3" Mueller, gear box.
- 2½", 3", 3½" Carlton Sensitive, B. B.
- 4" Hammond Jack-Knife, Sensitive.
- 4" Morris Plain, gear box.
- 5" American Triple Geared, Plain, d. c. on base.
- 5" Cincinnati Bickford Universal, m. d.
- 6" Drees Full Universal, m. d.
- 7" Fostick Plain, cone.

More than 1500 machines in stock.

MILLING MACHINES

- No. 3B Milwaukee Plain, double over-arm, m. d.
- No. 2 Cleveland Plain, s. p. d.
- No. 2 Cincinnati Plain m.d. flanged spdl.
- Nos. 3, 4 Cincinnati Plain, cone.
- No. 3 Kempsmith Plain, cone.
- No. 2 H. D. LeBlond Plain, cone.
- No. 13B Brown & Sharpe Pl., National Standard spindle.
- No. 2 Brown & Sharpe Universal, cone.
- No. 4 Cincinnati Vertical, m.d., Timken Bearings, National Standard Spindle, latest type.
- No. 6 Becker Vertical, cone.
- 48" Cincinnati Pl. Automatic, spur dr.
- 48" Cincinnati Pl. Automatic, worm dr.
- 24" Cincinnati Duplex Automatic, m. d.
- 24" Cincinnati Duplex Automatic, belt.
- 24" Cincinnati Plain Automatic, m. d. National Standard Spindle.
- No. 33 Kempsmith Mfg., s. p. d.
- 6x80" Pratt & Whitney Thread, m. d.
- 48" Oosterlein Tilted Offset, m. d., Timken Bearings, National Standard latest type.
- Ingersoll Vertical m. d., 40" rotary table.
- C66A Newton 3 spindle Continuous Miller, 48" dia. table.

GRINDERS

- No. 4A Landis Special Automotive Crankshaft.
- No. 72A5 Heald Plain Internal, 2 m. d.
- No. 11 Giddings & Lewis Teromatic, 3 motor drive.
- No. 70 Heald Internal, belt.
- No. 3 Brown & Sharpe Universal, belt.
- No. 4 Landis Universal, belt.
- No. 2 Oosterlein Tool & Cutter, belt.
- 20x144" Landis Plain Self-Contained Cylindrical, m. d.

Send us your inquiries.

1900 Tennessee Ave., **CINCINNATI, O.**

"BURNS BEST BARGAINS"

Air Compressor, Sullivan 10x8
tex-rope drive.
Air Compressor, Bury 6x6 horiz.
class L.
Brake, Ohl's 12' power.
Brake, D. & K. 10' cap. 14-ga.
Brake, Whitney 8', cap. 16-Ga.
Broach, La Pointe No. 1.
Bulldozer, Rock River & bending,
steel const. M. D.
Drill Multiple, Natco B-16 straight
line M. D.
Drill Multiple, Bausch 20-sp. M.D.
Drill, Multiple, Natco 14-B-24
sp. M. D.
Drill, Colburn D-4-24".
Drill, Moline No. 5-D Hole hog.
Drill Radial, Western 4'.
Drill Radial, American 3' sensitive
(2).
Drill Radial, Bickford No. 3-6'
full univ.
Die sinker, Pratt & Whitney No. 4
cherrying attach.
Die Filer, Barry No. 3.
Grinder, Ingersoll Cutter 24"x4½"
Grinder, Landis 15x8 Hydraulic
Int. M. D.
Grinder, Van Norman No. 3½
Radius.
Grinder, B. & S. No. 12 plain.
Grinder, Landis No. 1 plain.
Grinder, Gardner No. 6 dbl. disc
B. B.
Grinder, Besly No. 1 dbl. disc M.D.
Grinder, Heald No. 60 Int.
Keyseater, Mitta & Merrill No. 3
with broaches.
Lathes, Hendey 18x8, 16x6' taper
attachment.
Lathe, Sidney 16"x7' qk. chg.
Lathe, Advance 24"x8'.
Lathe, Porter-Cable 9x14.
Lathe, McCabe dbl. spindle 26-
48x12'.
Lathe, Drees Fox.
Lathe, American 18"x8' qk. chg.
Lathe, P. & W. 1x16 autom.
Miller, K. & T. No. 1-A S. P. D.
Miller, Hendey duplex.
Miller, Becker large hand.
Miller, Ingersoll 48x24x12, 3-hds.
M. D.
Miller, Ingersoll 24x24x10.

Miller, Garvin No. 15 vert.
Miller, Kempamith No. 4 maxi
continuous.
Planer, Gray 30x30x8.
Press, Toledo No. 30 Bench.
Press, Bliss No. 61 Reducing.
Press, Zeh & Hahnemann Percus-
sion power No. 8½.
Press, Bliss, No. 68 dbl. action.
Press, American Can No. 5 Inc.
F. W. T.
Press, Bliss No. 22 Inc.
Press, Ohl's 12' power.
Pipe Threader, Oster 2".
Punches, Rock River No. 2 Univ.
combination.
Punches, Kling No. 2 & No. 4.
Roll, 10' power, cap. ¼" C. P.
Roll, Hendley No. 3-E-6' slip,
cap. ½".
Riveter, Hanna pinch bug, 40-ton
8" throat.
Saw, Klemm No. 2 metal tilting.
Shear, Kent 4' power, cap. 10-ga.
Shear, Niagara No. 230 power,
cap. 16-ga.
Shear, Pexto 36" gap, 18" foot.
Shear, Badger, No. 27 splitting.
Shear, Quickwork rotary 60", cap.
14 ga.
Shear, Yoder 6'-14 ga.
Shaper, Ohio 24" bk. grd.
Shaper, Smith & Mills 26" bk. grd.
Turret lathe, Warner & Swasey
No. 3-A chucking.
Turret lathe, W & S power cross
feed, F. H.
Turret lathe, W & S No. 6 F. H.,
P. F. to turret (6).
Turret lathe, W & S No. 4 F. H.,
P. F. to turret (6).
Turret lathe, W & S No. 2 plain
P. F. to turret.
Turret lathe, Bardona & Oliver
No. 8 power cross feed P. F.
to turret.
Turret lathe, Greenlee flat (2).
Turret lathe, J. & L. dbl. hd. air
chucks, ser. over 50,000.
Turret lathe, Bardona & Oliver
No. 0 wire-feed.
Transmission, Oil Gear Type W,
600 RPM, 1000 lb. pressure.

F.W.BURNS MACHINERY CO.

1441 N. Third St.,

Milwaukee, Wis.

-PARTIAL LIST-

Automatics

No. 2G Brown & Sharpe.
3 $\frac{1}{2}$ ", 4 $\frac{1}{2}$ " Gridley sgl. spindle.

Boring Machines (Hor.)

5" bar NBP. floor type.
5" bar Newton Portable.
No. 3 Hamilton, 4 $\frac{1}{2}$ " bar.
No. 3-A Universal, 3" bar.
No. 1 Cleveland, 2 $\frac{1}{2}$ " bar.

Boring Mills (Vertical)

24", 36", 42" Bullard, "New Era".
30", 32" and 60" King.
42", 48", 54" and 60" Colburn.

Drills (Ball Bearing)

1, 2, 3, 4, 6 Spindle L-G.
1, 2, 3, 4, 6 Spl. Henry & Wright.
4 spindle Demco, p. 1.

Drills (Mfg.)

32" Cinn.-Bickford sliding head.
No. 2 Colburn, 1, 2, 3 and 4-spld.
No. 210 1&3 spld. Barnes.
20" Barnes, all geared.
No. D-5 Colburn.
No. 14 Natco Multiple.
No. 4 Bausch. mult.

Drills (Radial)

4" American Triple purpose.
4" Cincinnati-Bickford pl. radial.
5" American, full univ., m. d.
6" Western triple geared.
6" American Triple purpose.

Gear Cutters

Nos. 2, 3 & 12 Barber-Colman.
No. 18-H G. & E. hob.
No. 16HS Gould & Eberhardt.
Nos. 6, 61, 62, 65, 615, 625 Fellows.
No. 4-36" & 48" B. & S.
12"x72" G. & E. gear cutter.

Grinders (Plain)

16"x48" Landis crankshaft.
Heim Centerless.
Nos. 10 and 12 B. & S.
6"x32" Norton.
10"x18" 24", 36" Norton.
10"x50", 72", 96" Norton.
10"x36", 52" Landis.
14"x36", 50", 72" Norton.
18"x96" Norton, m. d.
18"x144" Norton, m. d.
20"x168" Landis, m. d.

Grinders (Univ.)

No. 13 B. & S., cutter & tool.
No. 4-12"x66" Landis.

Grinders (Misc.)

No. 14 Landis, Internal.
No. 70 Heald, Internal.
No. 10 Blanchard surface.
No. 16A Blanchard surface.

16" Arter rotary surface.
15"x17"x6", 8" Norton, o. s., surf.
No. 1 Gardner, hyd., face.

Lathes

No. 3 L. & S. Duomatic.
14"x8" American geared head T.A.
16"x8" L. & S. T. A.
18"x8" L. & S. sel. grd. hd.
18"x10" Reed-Prentice grd. head.
20", 22", 24" L. & S. sel. g. h.
24", 27", 30" L. & S. sel. g. h.
25"-27"x26" LeBlond.
30"x20" American geared head.
36"x30" Rahn-Larmon grd. hd.
54"x23" Johnson, T. G.
66"x21" Putnam t.g., m. d.

Millers (Plain and Universal)

Nos. 0, 1, 2, B. & S.
Nos. 2 & 3 Cinn. h. p., s. p. d.
Nos. 2-B, 3-B, 4-B B. & S.
Nos. 4 Cinn. h. p., s. p. d.

Millers (Mfg.)

No. 3 Sundstrand Rigidmill.
No. 5 45" Cincinnati hydromatic.
18" & 24" Cincinnati automatic.
No. 4, & No. 8 Lees-Brad.
36"x36"x12" Newton Duplex.
39"x44"x20" Ingersoll slab.
48"x36"x16" Ingersoll adj. rail.

Millers (Vert.)

Nos. 2 & 3 Cincinnati h. p.
No. 3-B Milwaukee.
No. 5-B Becker.
No. 6 Becker vertical.

Planers

24"x24"x12" Gray.
30"x30"x14" Gray, rev. m. d.
30"x30"x6", 18" Cincinnati.
36"x36"x8", 18" Cincinnati.
36"x36"x12" and 24" Gray.
36"x36"x14" - 24" Cleveland o.s.
42"x42"x30" N-B-P, Rev. m. d.
48"x48"x14" Liberty, openside.
60"x48"x16" Gray max. service.
72"x60"x16" American.

Presses

No. 106 Bliss Gap. dbl. crank.
No. 173-A Consolidated.

Shapers

16" Gould & Eberhardt.
16" and 20" Stockbridge.
20" & 24" Gould & Eberhardt.

Turret Lathes

No. 4 Warner, & Swasey.
24", 28" Gisholt.
No. 3 Cincinnati-Acme, a. c., b. f.
No. 3-A Warner & Swasey.
No. 4-A Warner & S., 7 $\frac{1}{2}$ " H. S.
No. 4-L Gisholt, 9 $\frac{1}{2}$ " h. s.

HILL-CLARKE MCHY. CO.

645 Washington Blvd.,

Chicago, Ill.

Rebuilt and Guaranteed Tools

BORING MILLS

Lucas No. 31 horizontal.
Espin Lucas No. 28-4" bar floor type horizontal.
Bullard 24" New Era, arr. m. d., threading attachment.
Colburn 34" vertical.

DRILLS

Pratt & Whitney No. 1 gun barrel.
Pratt & W. Nos. 11, 12, 13 mult. sp.
Harnes 29", 4 spindle camel back.
Natco Nos. 12, 35, 37 mult. spindle.
N-B-P 6" radial, universal.
Colburn No. 20 mfg. h. d. sgle. sp.
Bausch No. 1 multiple spindle.

GRINDERS

Brown & Sharpe No. 2, No. 3, No. 4 universal.
Safety No. 374 edge.
Bryant Nos. 6, 10A and 18A.
Heald Nos. 70 and 85 internal.
Rivett Nos. 6 and 103 internal.
Norton 6x32, 10x36, 10x50, 10x72, 14x36 plain cyl.
Brown & S. Nos. 10, 11, 12, 14, 16 pl.
Landis 6"x30" hyd. self cont. pl. m. d.
Queen City 16"x72" plain cyl.
Tool & Cutter Grinders—all makes
Cincinnati 12"x36" univ. and plain.
Gardner No. 77 m. d. disc.
P. & W. 14" vertical surface.

LATHES

14"x6" Hendey, American, Lodge & Shipley and Monarch.
16"x8" Pratt & W., Rahn Larmon.
24"x10", 24"x12" New Haven.
20"x24" Whitcomb-Blaisdell.
30"x15" Lodge & Shipley.
Gisholt type "I"—24" tilting turret.
Pratt & W. 14"x18, 2x26, 3x36 turret.
Jones & Lamson 2x24, 3x36.

MILLERS

B. & S. No. 3A Universal.
Milw. No. 14B dbl. ov., a.p.d. univ.
Cincinnati No. 1 & No. 14 universal.
Van Norman Nos. 1, 2, Duplex.
Cincinnati No. 2M, a. p. d. univ.
Milwaukee No. 24B s. p. d. vertical.
Brown & Sharpe No. 2 vertical.
Becker Nos. 4, 4B, 6A B vertical.
Milwaukee No. 2B, double ov. pl.
Garvin Nos. 13, 21 plain.
P. & W. No. 2 plain col. power.
Brown & S. Nos. 12, 13B product.
Potter & Johnston No. 2M.

Hendey No. 4 plain s. p. d.
Brown & S. Nos. 2Y, 3B, 5, plain.
P. & W. 4" spline.
Lincoln Millers—all makes.
P. & W. Automatics, all sizes.
Thurston Die Millers.
P. & W. Thread Millers—all sizes—40 in stock.

PLANERS

24"x24"x8" Whitcomb-Blaisdell.
30"x30"x12" Whitcomb-Blaisdell.
36"x36"x12" Chandler.
42"x42"x8" Gray.
51"x32"x12" Powell.
42"x42"x18" Niles 4 heads m. d.

PRESSES

L-J No. 5 o. b. l. grd.
Bliss 68N, 69N, d. a. cam.
Toledo No. 56, 5" stroke.
W-F 20 ton, hi. speed grd. rack and pinion drawing.
Manville No. 40 dial feed, (new).
Cons. Nos. 04, 72, 074, 74.
Henry & Wright 25 ton dieing machine, scrap cutter, m. d.
Z. & H. No. 14—84C percussion.
W-F 200 ton knuckle joint.
Bliss No. 7, d. b. g. s. a. drawing.
V. & O. No. 12 d. a. inclinable.
Terkelsen No. D1, 150 ton mech. spring.
Bliss No. 73 1/2 s. s.
Standard No. 4R s. s. reducing.
W-F No. 7, s. s. roll feed.
Ferracute P3, P4, D57—a. s.
W-F 6" stroke o. b. gd. under motion toggle swaging slide.

SCREW MACHINES

Brown & S. automatics, 20 in stock.
Cleveland & Gridley—all sizes.
National Acme Nos. 53, 55, 56, 515 automatics.
New Britain 1"x5", 1 1/2"x7" auto.
Davenport No. 2 automatics.
Cone 1 1/2" automatics.
Hand Screw Machines—all makes
MISCELLANEOUS
Broach, Foote-Burt No. 1, M. D.
Vert. Hyd., like new.
Gear Shaper, Fellows No. 7.
Header, W-F 1 1/2" S. S. S. Ball.
Measuring Machines, Pratt & W. 24" and 48".

Special

P. & W. 6" and 10" vert. shapers.

BOTWINIK BROS., INC.

MACHINERY

NEW HAVEN, CONNECTICUT

Good Used Machinery

AIR COMPRESSORS; Curtis 9x9 dbl. cyl. vert.; Ing-Rand 5x4 & 7x6 horiz.; Bury 12x12 horiz.

BORING MILLS; Niles 36" c. d. Baush 44" m. d. N-B-P 54" s. p. d. Vert. with 2 heads; Barrett 5" bar c.d. horizontal; Bullard 51" Vertical 2 heads.

CUT-OFF MACHINE, Davis 6" cap. (3).

DRILLS (RADIAL); Mueller 2½", Foadick 2½", Prent. 3"; Carlton 4" all gear box drive; Hammond 4" sensitive.

DRILLS (H. S. B. B.); H & W 2, 4, 5-sp.; Allen 2 & 6-sp.; Avey, Demco, Lel-Giff. 1-sp.

DRILLS (MISC.); Baker No. 217 (2) & No. 314 Hvy. Duty; Hamilton 42" S.H.; Barnes 26" S.H. tap. attach.; Barnes 20" & 24" 1-sp. & 20" 4-sp. & 24" 3-sp. all grd. camel back; P & W No. 12 Multi-Sp.

GEAR CUTTERS; G & E 36", G & E 48", G & E 60" & B & S 26" s. p. d. automatic spur; Fellows 36" gear shaper.

GRINDERS; P & W 12" vert. surf.; Cin. No. 1½" & B & S No. 12 univ. tool, B & S Nos. 11 & 16 plain, Heald Nos. 60 & 65 Int. B. & S. No. 13 Univ. & Tool; Landis 10x30" Plain.

HONING MACH.; Hutto 2-spindle Vert. M. D.

KEYSEATERS; M & M No. 0 vert. Burr horiz.

LATHES; Reed-Prent. 16"x8" grd. hd.; LeBlond 18x8", Lehmann 18"x9", Hendey 18"x8"; Amer. 22x8", Whit. Blais. 22"x8"; Davis 22"x10"; L & S 20"x10", S-B & E 20"x10" q. c. g.

MILLING MACHINES; Ohio No. 24, Kemp. No. 3, B & S No. 3, Cleve. No. 1 s.p.d. univ. B. & S. No. 2, Amer. No. 1½, Cin. No. 3, B & S No. 3, Hendey No. 3, LeBlond No. 3, Mil. No. 3-B s.p.d. plain, Becker Model "B" & No. 6 vert.; Kemp. No. 33 s.p.d. Prod.; Ingersoll slab, m. d. 33", table 30½"x16".

PLANERS; Gray 30"x30"x10", Gray 60"x48"x10", 2 hds.; N-B-P 48" x 20" 4 hds. Gray 28"x28"x6" 1-hd.

PUNCH PRESSES; Bliss No. 19 o. b. i.; Amer. Can No. 4½ arch; Toledo No. 3 o.b.i.; Fer. No. PG-3 cl. back, L.&J. No. 2; Toledo Nos. 167 and 168 toggle. Toledo No. 35 grd. cl. back.

SAWS (HACK); Racine 6x6" H. S. Atkins 8x8" H. S. Peerless 6x6" M. D. Univ. Shaping.

SHAPERS; S & M, G & E, Ohio, Mil., Q. City, Davis, Cin. 16"; Ohio & G & E 20"; S & M., Q. City, Rock, 24"; Ohio 26"; Cin. 24" s. p. gr. box; Rock, 24" m. d. gr. box; Rhodes 3½" Vertical.

SCREW MACHINES; W & S No. 6 Hand; Nat. Acme. Nos. 515, 52, 55, & 56 4-sp.; Gridley 4-sp. ¾" & 4-sp. 1 ¼" cap.

TAPPING MACHINES; (2) Garvin No. 2 Vertical Automatic.

THREAD MILLER; Moline No. 10.

TURRET LATHE; Gisholt, 24" swing, 6¼" hole.

Above is only small part of our large stock on hand.

McDONALD MACHINERY CO.
1531-35 No. Broadway, St. Louis, Mo.

OVER 2000 MACHINES IN STOCK

PROMPT DELIVERY!

Hydr. press, Watson Stillman, 200 ton, 2-10" rams, 38x62 bet. posts. Before moving... \$1500

Press, dbl. crk. tog. No. 408-B Bliss, 84" bet. upr. 50x84 bed, tie rod... \$6500

Radial Drill, 3' American, motor on arm.

Boring mill, horiz., 3' bar, Universal.

Grinder, No. 25 Heald Rotary Surface, 16" mag. chuck, hydraulic feed.

CLOSEOUTS

3" horiz. boring mill.....	\$ 350.
18"x18' L. & S. lathe q.c.g.....	250.
18" Besley Disc Grinder.....	150.
3"x36 J. & L. flat tur. lathe.....	250.
15"x6 South Bend lathe.....	200.
30"x6 Planer.....	200.
2' Feedick radial drill.....	250.
26"x12 Bement lathe.....	200.
48"x17 Pond lathe.....	750.
Planer, openside, 48"x14.....	1250.

Large Heat Treating Furnace — conveyor type. Used less than 30 days. Cost new about \$35,000. Complete with pyrometer, \$5,000.

Angle Roll, No. 16 Kane & R., m.d. Arc welders, 150 to 600 amp.

Boring mills, Bullard 36" rapid production; side head.

Brakes, power, Chgo. St. 10' 3/16", 10' 10 ga.; 6' 3/16"; 8' 10 ga.;

Box & Pan 8' 10 ga.

Die Sinker, No. 2 Pratt & Whitney.

Dieing out press, H. & W. 25 ton.

Drills, Multiple, Nos. 11 & 12 Natco.

Eyelet machines Penn. motor drive.

Gang Slitters, 32 & 36".

Generator set, Westinghouse 57 H.P.

A.C. 38 KW 152 Amps., d. c.

Grinder, disc, Gardner 30" b. b.;

53" horizontal; cyl. Landis 12x42";

Hammers, 100 lb. Bradley, helve.

Ironworkers, Shatz 6x6 angles;

No. 1 1/2 Buffalo; Smith 6x6

Lathes, 25"x16'; 24"x10'; 14x12.

Millers, prod. Lincoln type Hendey

Millers, vert. No. 3 Knight; No. 1

B. & S., No. 3 4B & 5B Becker.

Millers, univ. Nos. 24 & 25 Ohio.

Millers, planer type, Ingersoll.

Nibblers, Campbell, No. 1 & 2.

Planers, 72"x18', 3 heads.

Spinning lathes (15) ball bearing Prybil — Bliss — Toledo 18" — 22" — 30".

Press brakes, 5' & 10' Pexto, 18 ga.; 10' 10 ga. Chicago Steel.

Radial drills 2', 3 1/2'; 2 1/2'; 5 and 6'

Rivet spinners, No. 107 Grant.

Roller die mach. 5-sp. Mishawaka.

Rolls, 14' Bertsch, pwr. elevation.

drop end, m. d.; 8" diam. rolls.

Saws, shaping 6"x6"; hack 9"x9".

Saws, friction, Nos. 0 & 1 Ryerson.

Shaper, 24" Ohio Dreadnaught,

m.d., tool room type tilt top tbl.

Shapers, 18" & 24" G. & Eber. s.p.d.

Shears, 10' 14 ga.; 13' 3/8", 20" gap;

10' 3/16" m.d.; 8' 10 ga.; 10' 10 ga.

8' 3/16", 42" 10 ga. 10 1/4" — 13 1/2".

Shear, beam and angle, Pels 20"x

75 lb.; 8x8x3/4" angles m. d.

Stake riveter & punch, 48" m. d.

Turret Lathes, W. & S., 4, 6.

Wire Straightener, 3/8" Nilson, 8';

Wells 3/8"x22"; Shuster 3/8" cap.

Gun welder, 50 KVA Federal

Port. 440 volts, 99% new.

Welders, 2 1/2, 5, 7 1/2, 10 KW Bargain

PRESSES

Dbl. Crk.: No. 7 Bliss, 54" bet., 7" Stroke, tier rod.

Straight side; No. 77 1/2 Bliss 250 ton, 10" stroke; No. 305

Bliss, 8" stroke; No. 6M Am. Can; No. 5A Bliss.

O.B.I., 40 presses in excellent condition; Nos. 1, 2, 3, 4, 5.

INTERSTATE MACHINERY CO.

199 S. CLINTON ST., CHICAGO

Good Machinery, Attractively Priced

BORING MILLS — Horizontal

Niles-Bement-Pond No. 1½ portable 3½" bar.

Beaman & Smith 5" and 6" bar.

Cleveland No. 1 Horiz., 2½" bar.

BORING MILLS — Vertical

Bullard 24".

Niles Bement Pond 42", 44", 51", 52".

Niles 7-10' Extension.

Pond 80", 3 heads.

N. B. P. 44" heavy duty P. R. T.

AUTOMATIC SCREW MCHS.

Gridley 9/16", 7/8", 1½", 1¾" 2½".

New Britain Nos. 22, 24, 33, 454.

Potter & Johnston Nos. 6A and 7A.

Cleveland 2", 3½", ½", ¾" model A.

GEAR CUTTING EQUIPMENT

Brown & Sharpe No. 6, 73".

Fellows No. 6, 61, 615 gear shapers.

Fellows Nos. 7, 71, 712 gear shapers.

AN EXCEPTIONAL "BUY"

COCHRANE & BLY No. 14 Univ. Die Milling Machine and Shaper, power rotary table, high speed milling attachment, s. p. d.

Fellows No. 8B burnisher.

Lees Bradner planisher.

Gleason 24" gear planers.

Barber Colman Nos. 3, 12 hobbors.

Cleveland 8 spindle gear hobber.

DRILL PRESSES—Mult. Spdle.

Natco Nos. 12, 13 and 22.

Pratt & Whitney No. 12.

Natco C-11 high speed.

Natco C-13-H hydraulic.

Bausch No. 4 rect. hd. 58x42; 30 sp.

TURRET LATHES and SCREW MACHINES

Brown & Sharpe 6F Screw Mach.

Libby 26" Turret: grd. hd.; 7½" spdl.

Gisholt 24" Turret.

Warner & Swasey No. 6.

MILLING MACHINES Plain and Universal

Cincinnati No. 2, 3, 4 Plain, SPD.

B. & S. No. 2, 2B, 3, 4 Plain SPD.

Brown & Sharpe No. 2, 3A univ.

Kearney & Trecker No. 1 plain

standardized spindle nose.

Kearney & Trecker No. 1½B univ.

GRINDERS

Heald No. 72 Hydraulic.

Heald No. 72-A, 3 sismatic.

Bryant No. 3 internal.

Blanchard Nos. 10, 16 surface.

Heald Nos. 50, 55, 60, 65 internal.

Landis 20x132 cyl.

Norton 14x72, 14x96 plain cyl.

Pratt & Whitney No. 14 surface.

Springfield No. 7 grinder.

LATHES

Putnam 50"x30' grd. hd.

Putnam 36"x28' grd. hd. nearly new.

Pittsburgh 36"x38' grd. hd.

Lodge & Shipley 36"x16' grd. hd.

American 36"x21' grd. hd. Q. C. G.

Bridgeford 36"x60' boring & turning.

Bridgeford 36"x60' boring.

McCabe 27-49"x16' double spindle.

McCabe 24-48"x14' double spindle.

LeBlond 25"x12' cone drive.

Greaves Klusman 16"x8' m. in base.
Monarch 14"x10' grd. hd.
Hendey 14"x8' geared head.
Springfield 14"x8' geared head.
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Ingersoll 24"x24"x12' planer type.

Ingersoll 24"x24"x12' adi. rail.

MILLING MACHINES

Vertical and Thread

Becker No. 4B, C-1 and C vertical.

Pratt & Whitney 6x14.

Kearney & Trecker No. 1 plain

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Reed Prentice 4'.

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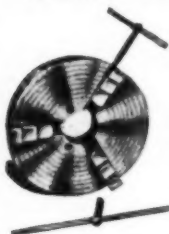
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They are durable and accurate and fully meet the requirements of a combination chuck for general manufacturing or machine shop purposes.

List F—Geared Scroll Combination Chucks These Chucks Have Solid Reversible Jaws

QUANTITY	SIZE	LIST PRICE	OUR PRICE
200	5" 3 Jaw	\$ 89.00	\$20.00
50	6" 3 Jaw	101.00	26.50
20	10½" 3 Jaw	149.00	36.50
40	12" 3 Jaw	168.00	45.00
30	15" 3 Jaw	200.00	60.00

Solid Body Universal Geared Scroll Chuck For Regular Work

2 SETS OF JAWS

QUANTITY	SIZE	LIST PRICE	OUR PRICE
100	5" 4 Jaw	\$ 60.00	\$ 17.00
25	7½" 4 Jaw	80.00	25.00
4	10½" 4 Jaw	103.00	35.00
2	18" 4 Jaw	360.00	82.00
1	24" 4 Jaw	593.00	136.00

Four Jaw Independent Chucks With Solid Reversible Jaws

QUANTITY	SIZE	LIST PRICE	OUR PRICE
12	24" 4 Jaw	\$186.00	\$95.00

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Automatics, Cleveland, 4 spindle, 4", Model M Chucks.
Automatics, No. 00 B. & S.
Boring Mill, Cleveland, SPD 2 1/2".
Broach, American 12 ton Hyd. Vert. Semi-Auto., M. D.
Drills, 21" & 24" Cincinnati B. (28).
Drills, Baker Nos. 121, 217, 314, 416.
Drill, Radial 3" Western.
Drill, Henry & W. 4 sp., No. 2 M.T.
Furnace, Homo Electric.
Grinder, 6x32 Norton, M. D.
Grinder, Bath Universal.
Grinders, No. 1 LeBlond T. & C.
Grinder, No. 70 Heald Duplex, Internal.
Grinder, No. 84 Gardner Dble. Disc, Opposed Type, Auto. Feed, M. D.
Grinders, No. 13 B. & S., M. D. (3)
Grinder, Pratt & Whitney Surface, M. D., B. B. spindle.
Grinder, No. 7 1/2 Gardner Disc, M. D.
Grinder, No. 70 Heald Internal (3).
Grinder, No. 3 Abrasive M. D.
Grinder, Heim Centerless, M. D.
Grinder, No. 72 Hyd. Int. Heald, M. D., (3).
Grinder, No. 2 Cin. Univ.
Grinders, No. 12A and No. 20 Bryant Chucking.
Grinder, No. 1 Wilmarth & M. Surf.
Hammers, Nos. 3A & 4A Hi-Speed.
Lathes, Sundstrand Stubbs M. D. (4)
Lathes, 19"x12" LeBlond, Q. C.
Lathe, 16"x6" Hendey SPD.
Lathe, 18"x8" Hendey BMD.
Lathe, 20"x8" Cisco T.A.
Lathe, 30"x10" Reed Prentice M. D.
Lathe, Turret, No. 6 W. & S. Univ.
Lathe, Turret, No. 5 Foster, Univ.
Lathes, Tur., No. 9 B & O Univ. (2).

Mills, No. 3 B. & S. Vert. M. D.
Mills, No. 2 B. & S. Vert. M. D.
Mills, No. 22 Garvin Vert.
Mills, Nos. 2B & 3B B. & S. SPD.
Mill, No. 3GH Hendey Univ.
Mills, 18" and 24" Cin. Prod.
Mill, 18" Cincinnati, Duplex.
Mill, Thread, Taft Pierce.
Oil Groover, Wicaco.
Pipe Threaders, 6" Williams & 6" Oster, M. D.
Planer, 48"x48"x10" Liberty open side.
Planer, 30"x30"x10" Liberty O. S., M. D., 1 rail, 1 side head.
Planer, 60"x60"x14" Niles Bement Pond, Box Table.
Press, Hamilton D. C. No. 609.
Press, No. 14 Toledo Hor. Cr., M. D.
Press, No. 4A Bliss, adj. bed.
Presses, Nos. P2, P3, P4 Ferracute M. D.
Press, No. DG53 Ferracute (3).
Press, No. 21 Bliss Cons. Horning (4).
Presses, 10 & 50 ton Henry & Wright M. D., Auto. Feed.
Press, No. 1018 Bliss Toggle.
Press, No. 6D Bliss, dble. crank, Tie Rod, 12" stroke, 19" sh. ht., 34"x66" bol. Twin Drive.
Press, Perkins, Cam Drawing.
Press, Cleveland, No. 44 Adj. Bed.
Presses, Ferracute SRG, 102 S.S., DC.
Saw, No. 3 Thiel, M. D.
Saws, 6x6 Racine (2).
Screw Machine, No. 4 W&S, bar feed.
Separator, Oil, 1 bu. Curtis.
Shaper, 20" G. & E. SPD, MD.
Shear, Niagara 36" 14 ga.
Shear, 10' 1/4" United Eng'g M. D.
Shear, 10' 3/8" Pittsburgh.
Slotter, 16" Betts, M. D., late type.
Thread Mills, Taft Pierce.
Welders, Spot, Seam and Butt.
Wire Straightener, 1/8"-5/8" cap. (6).

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4¹ Cincinnati-Bickford Plain Radial Drill, S. P. D.

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- 1—No. 00 Brown & Sharpe Automatic Hi-Speed Threading Machine.
- 4—No. 0 Brown & Sharpe Automatics Hi-Speed with Automatic Rod Magazines, Swing Stops, Double Index Turrets.
- 5—No. 0 Brown & Sharpe Turret Formers Hi-Speed with Automatic Rod Magazines, Swing Stops.
- 2—No. 0 Brown & Sharpe Tur. Formers, Hi-Speed.
- 2—No. 0 Brown & S. Turret Formers, Reg. Speed.
- Nos. 0 and 2 Brown & Sharpe Hand Screw Mchs.

GRINDERS

- 14¹ Pratt & Whitney Vertical Ball Bearing Grinder.
- 3—No. 11 Brown & Sharpe Plain S. P. Drive.
- 6—No. 10 Brown & Sharpe Plain, S. P. Drive.
- 1—No. 33 Abrasive Vertical.

LATHES

- 12, 14, and 16¹ Hendey Lathes.

PRESSES

- 6—No. 16 Bliss Horning Presses.
- 20—No. 5 Loshbough & Jordan O. B. I. Presses.

MILLERS

- No. 21 Brown & Sharpe Automatic Millers.
- No. 2Y Brown & Sharpe.
- 6"x80" Pratt & Whitney Thread Miller.
- 4½"x12" Pratt & Whitney Miller.

DRILLS

- 2 spindle Edlund, Power Feed.
- 2, 3, 4, spindle Avey.
- 6 spindle Allen.

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1", 1 1/2" & 1 3/4" Gridley.
10" Bullard Continumatic.

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No. 1 SSSD, Wat. Farrel header.
No. 3 DSSD, Wat. Farrel header.
1", 1 1/2" & 2" Landis 2 spdl. threaders.
2" & 3" Acme threaders.
1", 1 1/2", 4", 5" Ajax upsetters.
1 1/2" Acme upsetters.

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No. 3 Oilgear hydraulic.
No. 3L Lapointe hydraulic.
15 ton Oilgear vert. hydraulic.
10 ton Metalwood vert. hydraulic.
Nos. 2, 3 & 4 Lapointe.
Nos. 1 1/2 & 3 American rack.

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706' Sullivan angle compound.
446' Bury 2 stage.
335' Ingersoll Rand.
263' Worthington.
106' Chicago Pneumatic.

DRILLS

Nos. 216, 217, 315, 321 Baker.
3 1/2", 4", 5", 6" and 8" Western radial.
21", 24", 28" Cincinnati.
Nos. 2 & 3 Aveymatic.
Nos. 11, 12, 13, 14, 30 Natco.

GEAR CUTTERS

Nos. 16HS, 18H and 24H G. & E.
Nos. 1 and 5A Lees Bradner.
No. 12 Barber Colman.
Nos. 6 & 715 Fellows.
11" Gleason bevel.

GRINDERS

No. 2 Cincinnati centerless.
Nos. 70, 72, 72A3 & 75 Heald.
26" No. 16 Blanchard.
12"x24" & 16"x48" Diamond surf.
6"x18" to 16"x72" I

LATHES ENG'NE

14"x6" American geared head.
16"x8" & 10" Lodge & S. grd. hd.
18"x8" Boye & Emmes.
20"x8" Monarch
24"x12" Lodge & Shipley.
42"x42" Putnam geared head.

LATHES, TURRET

24" Bullard vertical.
Nos. 4 & 6 Warner Swasey.
2 1/2" & 3" Jones & Lamson.
15" Libby.
21" & 24" Gisholt.
1 1/2" & 3 1/4" Acme.

LATHES, MFG.

8" Sundstrand Stub.
13"x6" Automatic threading.
17"x5", 6" & 8" Leblond Mfg.
20"x8" Wickes grd. hd. Mfg.
11"x4" & 6" Leblond grd. hd. Mfg.

BORING MILLS

100" Betts.
60" Gisholt.
42" Detrick & Harvey.
34" Colburn.
2 1/2" Cleveland horizontal.
3" Binsee knee type.

MILLERS, PLAIN

Nos. 2, 3 and 4 Cincinnati.
Nos. 2 and 4 LeBlond.
Nos. 1 1/2, 2 hvy., 3B & 4B B. & S.
No. 4 Hendey.
No. 3 Kempsmith.
No. 2 1/2 Rockford.

MILLERS UNIV. & VERT.

No. 1 1/2 Rockford.
No. 2 Cincinnati.
No. 2, 3A & 3A heavy Brown & S.
No. 2 B. & S. vertical.
No. 6 Becker vertical.

MILLERS PROD.

18", 24" & 48" Cincinnati auto.
24" & 28" Cincinnati duplex.
24" & 48" Newton cont. rotary.
48" Ohio tilted offset.
No. 1 Davis & Thompson drum.

PLANERS

24"x24"x6" Liberty openside.
30"x30"x12" Cleveland openside.
36"x36"x12" Gray.
36"x36"x16" Cleveland openside.
48"x36"x10" Liberty openside.

PRESSES

Nos. 1 1/2 & 5A Bliss Toggle.
600 ton Cleveland Coining.
150 ton Ferracute Coining.
Nos. 55, 56, 56 1/2 Toledo.
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- 1—72"x29" Niles Bement Pond.
- 1—65"x32" Bement Hvy. Duty.
- 1—42"x20" Betts Bridgeford.
- 1—36"x26" Niles Bement Pond.
- 1—30"x36" Bridgeford.
- 1—30"x16" H-S-Gamble.
- 1—24"x30" Lodge & Shipley.
- 1—18"x8", 14"x8" Lodge-S., G. H.

BORING MILLS

- 1—24" Bullard New Era.
- 1—36" Bullard Rapid Production.
- 1—51" Bausch.
- 1—53" Niles B Pond Rapid Traverse.
- 1—60" Colburn Vertical.
- 1—42" Colburn Vertical.
- 1—62" Niles Vertical.
- 1—84" Bullard Vertical.
- 1—90" Betts Vertical.
- 1—96" Niles B Pond Rapid Traverse.
- 1—10-16" N.-B.-Pond Vertical.
- 1—10" Niles Vertical Boring Mill.

MILLERS

- 1—No. 4-B Brown & Sharpe Plain.
- 2—No. 2 Cincinnati Plain Rapid Traverse.
- 1—No. 4 Cincinnati Hi-Power Plain.
- 1—No. 4 Kempson Maxi.
- 1—No. 5 Cincinnati Plain.
- 1—No. 5 Brown & S. plain miller.

RADIALS

- 1—5" American Triple Purpose.
- 1—5" Niles Right Line Radial.
- 1—5" Cincinnati-Bickford Plain.
- 1—6" Cincinnati-Bickford Pl., M. D.

DRILLS

- 1—No. 210 Barnes All Geared, B.B.
- 1—No. 2 Colburn four-spindle.
- 1—No. 4-D Colburn.
- 1—No. 1 Garvin Duplex Horizontal.
- 2—No. 12 P. & W. multiple spindle.
- 1—24-Spindle Bausch Heavy Duty.

PLANERS

- 1—42"x42"x20" Niles Planer.
- 1—48"x48"x10" Niles-Bement-Pond.
- 1—56"x56"x14" Niles-Bement-Pond.
- 1—56"x56"x14" Gray.
- 1—60"x60"x20" D. & H. Openside.
- 3—72"x72"x12" Pond.
- 1—36"x36"x12" Cincinnati 4 heads.
- 1—25" Niles Plate.

SHEARS

- 1—No. 2, Hilles-Jones Guillotine.

GRINDERS

- 1—No. 2 B. & S Universal Grinder.
- 1—No. 13 B. & S. Universal.
- 1—18"x84" Landis Grinder.
- 1—20"x96" Norton Plain.
- 1—14"x72" Norton Plain.
- 1—10"x72" Norton Plain.

GEAR CUTTERS

- 1—72" Gear Cutter.
- 2—6", 11", 18" Gleasons.
- 1—36 B-M Gould-Eberhardt.
- 1—No. 14 B. & S Spur & Bevel.
- 1—100" G. and E. Hobber.
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- 1—No. 5 Cincinnati Gear Cutter.
- 1—No. 6 Fellows Gear Shaper.

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- 5" bar, Niles Floor Type.
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- 3 1/2" bar, Landis No. 35 floor type.
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- 42" Bullard, Power Rapid Traverse.
- 48" Colburn, P. R. T., M. D.
- 60" Bullard, P. R. T., M. D.
- 72" Bullard, Self Cont.
- 10' Niles AC M. D.

DRILLS, Radial

- 2 1/2' American S. P. D.
- 3' American Sensitive.
- 4 Spindle Kokomo, 12 1/2" overhang.
- 4' and 6' Mueller, Gear Box (2).
- 5' American Tr. Grd.
- 6' American universal.
- 6' American Triple Grd. Gear Box.
- 6' Cincinnati-Bickford.
- 4 & 6 spindle Allen.

GRINDERS

- No. 2 Fraser Univ. 10" x 30".
- 10" x 36" Landis Plain (3).
- 12" x 36" Landis Plain.
- No. 2 Landis Univ. 12" x 36".
- 16" x 48" Landis crankshaft.
- 24" x 96" Landis Self Cont.
- 26" x 120" Landis Self Cont.
- 48" Badger face, Hyd. Feed.
- No. 2 Diamond 36" x 12".
- Nos. 55 & 65 Heald Cylinder.
- 53" Besley Vert. Spin. Disc.
- 14" P & W Surface M. D.
- No. 2 B. & S. Surface M. D.
- No. 33 Abrasive Surface (2).

LATHES

- 7" x 60" Fitchburg Low Swing.
- 16" x 6" Hendey; 16 x 6 Walcott.
- 18" x 7" Lehmann Grd. Hd.
- 18" x 8" Whitcomb-Blaisdell Cone.
- 19" x 8 and 10" LeBlond Cone.
- 20" x 8" American Cone.
- 24" x 10" and 12" American Cone.
- 24" x 12" Putnam Q. C. G., Cone.
- 24" x 19" American L. C. G.
- 26" x 10" Boye & Emmes QCG Cone.
- 28" x 17" Chard, Grd. Hd.
- 30" x 12" S & B Cone, T. A.
- 36" x 16" Bridgeford AC M. D.
- 36" x 26" L & S cone Q. C. G.
- No. 1 N. H. P. 42" Carwheel.
- 42" x 20" Bridgeford Grd. Hd.
- 60" x 30" Pittsburg Grd. Hd.
- 64" x 18" Bement-Miles Cone.

MILLERS, Production

- 8" & 12" Pratt & Whitney.
- 28" Cincinnati Semi Automatic
- No. 7H Becker.
- No. 2 Knight.

MILLERS, Planer Type

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- Model CS Becker Continuous.
- Model B Becker, feeds 36 x 14 x 15, spd.
- No. 5B Becker, Cone.

MILLERS, Plain

- No. 4G LeBlond Grd. Hd.
- No. 3G Hendey Grd. Hd.
- No. 2B Heavy, B. & S.

MILLERS, Universal

- No. 2 Owen Cone.
- No. 2 Brown & Sharpe Cone.
- No. 2BS Milwaukee Grd. Hd. M.D.

PLANERS

- 84" x 84" x 18" N. B. P., M. D 4 hds.
- 72" x 60" x 18" D & H Openside.
- 48" x 48" x 10" D & H Openside.
- 42" x 36" x 12" & 24" x 6" Cincinnati.
- 30" x 30" x 10" D & H Openside.
- 10" x 7" x 18" Betts M. D.
- 24" Lynd Farquhar Openside.

PRESSES

- No. 8 1/2 Z. & H. Percussion.
- No. 58 1/2 Toledo SS Grd.
- 400 ton Southward Hyd. Vert.
- 400 ton N.B.P. Hor. Hyd. Carwheel.

ROLLS

- 12" x 1 1/2" N. B. P. M. D.
- 17" x 1 1/2" Niles A. C. m. d.
- 10" x 1 1/2" Bertsch, pyr.

SAWS

- 10 x 10 Napier Metal Band Saw.
- 6 x 6 Avey Milband.
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- No. 2B Gorton Internal, 7 1/2".
- 6" Peerless univ., shaping.
- No. 16 Higley, cold, m. d.
- No. 4B Cochrane & Bly.

TURRET LATHES

- No. 6 Warner & Swasey.
- 4L Gisholt—no cross slide carriage.
- 24" Gisholt Cone 5 1/2" H. S.
- 26" Libby, 7 1/2" spindle hole M. D.
- 26" Steidle 6 1/2" spindle hole M. D.
- No. 4 Warner & Swasey, 14".

MISCELLANEOUS

- 15" & 18" Dill Slotters.
- 10" x 10 ga. Chicago Apron Brake.
- 18" Gridley Automatic 4 Spindle.
- 24" Gridley Single Spin. M. D. Auto.
- Nos. 23, 24 & 34 New Britain chkg.
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- Flanger, 1/2" McCabe Pneu.
- No. 13H B. & S. Gear Cutter.
- 11" Gleason Bevel Generator M.D.
- Hammers, Nos. 5N & 2B Nazel.
- 8" & 3" Jarecki Pipe Machine.
- 2" Bignall & Keeler Pipe Machine.
- 8" and 6" Saunders, Pipe Machine.
- Shaper, 7" Rhodes M. D.
- 24", 20", 16" Smith & Mills Cone.

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Brown & Sharpe No. 1 Plain Miller, cone dr. Vise, c/s.	275
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Cincinnati Tool & Cutter Grinder No. 1 1/2, comp. equip.	350
Smith & Mills 26" Crank Shaper, BG, Cone Dr; Heavy;	475
Bliss No. 18 OBI flywheel, Punch Press; 1 1/2 str; (4) ea.	135
BRAKE; D. & K. 60" 14 ga. Box & Pan hand Brake	145

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Brake, 10' 6" x 1" Ohl. Power Press.
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Die filer, No. 5 Thiel, m. d.
Die filer, No. 5 Rearwin, motor drive.
Drill, 5' Drees, univ. radial arr. m.d.
Drill, No. 13 Natco, 12 spindles.
Drill, 4 spdl. L-G. No. 2 MT, pwr. fd.
Drill, 4 spdl. L-G. No. 3 MT, pwr. fd.
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Drill, No. 2 Avey, arr. m.d.; 12" ovhg.
Drill, 26" Barnes sldg. hd. tap. att.
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Gear hobber, No. 3 Barber Colman.
Gear rougher, 38 BM, G. & E.
Grinder, No. 1 B. & S. universal.
Grinder, No. 2 B. & S. surface. m. d.
Grinder, No. 2 Reid surface. m. d.
Grinder, No. 2 Norton univ. T. & C.
Grinder, No. 3 Wilmarth & Mor. surf.
Grinders, No. 1, 2 & 3 B. & S. univ.
self contained, m. d. 3 motors.
Grinder, No. 11 B. & S. plain, m. d.
Grinder, No. 60 & 85 Heald internal.
Grinder, No. 25 Heald hyd. rot. surf.
Grinder, 10"x36" G. & Liv. hyd. surf.
Hammer, 14B High Speed.
Keyseater, No. 0 Baker, 1" cap.
Lathe, 12"x5' Hendey, q. c. g.

Lathe, 13"x5' South Bend, q. c. g.
Lathe, 14"x6' Hendey & Rock, q. c. g.
Lathe, 14"x6' Lodge & Shipley, q. c. g.
Lathe, 14"x8' Rockford q. c. g.
Lathe, 16"x6' American, q. c. g.
Lathe, 16"x8' Lodge & Shipley, q. c. g.
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48"x48"x10" Belmer Planer; 4 hds.
16"x8" Whitcomb-Blaisdell geared hd.
Lathes, New. Bargain.
16"x6" Hendey Lathe; Tie Bar.
40"x20" Lodge & Davis Lathe Belt dr.
40"x18" Prentice Lathe; blks. to 53";
32" 4-J Chuck.
1"x18" P. & W. Automatic Lathe.
2½" Cleveland horiz. boring mill; rot. tbl.
60" Bullard Vert. Boring Mill; 2 hds.
D. C. Motor Drive.
2-42" Vert. Boring Mills; Gisholt
& Niles.
24"x12" Bradford & New Haven
Lathes—18"x8" L. & S. geared hd.
6" American Pl. Radial Drill.
4" Ryerson Radial s. pulley gear box.
No. 310 Baker Hvy. Duty Drill with
threading attachment.
24" Barnes 4 Spdl. Camel Back Drill.

20" Barnes 4 spdl. Drill; tapping att.
No. 1 Diamond Surface Grinder.
30" Diamond Face Grinder; textrope
Dr. with A. C. Motor.
U. S. Elec. hvy. fdy. grinder 7½ h. p.
No. 1 Churchill Surface Grinder.
3—No. 4 and 6—No. 6 W. & S.
Turret Lathes.
6¼"x24" Gisholt Turret Lathe.
12"x12 Ga. Toledo Sq. Shear.
9"x16 Ga. Ohl. Sq. Shear.
8" Robinson Toggle Press; 10 Ga.
No. 4 & 5 Toledo O. B. I. Presses.
No. 175-A Consolidated Dbl. Crank
Press; Bet. uprights 42"; 10" Gap;
O. B. I. with A. C. Motor Drive.
15-Ton Lucas Press; Motor Drive.
2½" Landis bolt cutter; leadscrew, b.d.
24" and 36" Gear Cutters.
No. 613 Gang Slitter; 36"x18 Ga.
with abt. 10 cutters.
E. F. Cleveland Punch & Shear: 6x1
flat; 1½" hole thru 1"—24" Throat
A. C. Motor Drive.
20" Columbia Hvy. Duty Shaper.
48"x¼" D. & K. Apron Brake.
30—Upright & Hi Speed Drills.

The Norton-Broadway Machinery Co.

610 Baymiller St., Cincinnati, Ohio

Boring Mills — Vertical

10" Niles, 2 swivel heads.
62" Bullard, Standard, M. D.
60" Bullard, Rapid Traverse, M.D.

Boring Mills—Horizontal

34" Bar Landis No. 35 M. D.

Grinders and Millers

26"x120" Landis, Plain, M. D.
Model CS Becker, Continuous, Vert.

Lathes

66"x30" Johnson, cone dr., hvy. duty.
60"x30" Pittsburgh, Motor Drive.
28"x17" Chard, motor drive.
24"x12" Lodge & Shipley, Grd. Hd.

Planers

120"x84"x18" Betts, Rap. Trav., M.D.
84"x84"x30" Bement M., 4 Hd., M.D.
72"x60"x18" D & H. Openside.

Slotter

24" NBP Crank Slotter, M. D.

Priced Low — Partial Listing — Send Your Inquiries

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200amp. Hobart Bat. Chrg. 7.5v. 1750
36" Crescent Band Saw, ½" saw.
2000 lb. B. & S. Bld. Drop Hammer.
5000 lb. dbl. frame N.B.P. Steam ham.
1100 lb. apl. frame steam Forg. Ham.
24" Gould & Eberhardt Shaper.
26"x11" Wickes D. B. G. Hvy. Duty
12"x10" Chi-Pneu. M.D. Air Comp.
10"x1" Wickes Bend. Rolls Pyr. Type.
8x8x1" H. & I. Angle Sh. on turntbl.
10"x¾" Ohl Pow. Sq. Shear, B. D.
6" Merrell pipe Cutting & Th. Mch.
Lennox Rotary Bevel Shear, ¾" cap.

84" Niles Vertical Mill, B. D.
30" Bullard Mill, Turret Head.
48x1" L. & A. Pl. Sh. on turntbl. m.d.
300 amp. Lin. Port. DC Arc Welder.
400 HP new Water Tube Boiler.
10ton Hand pwr. trav. Crane 46'8" span.
60x48"x14" 3 head Niles Planer.
400 KW AC Steam Generating Set.
20"x10" Hendey Lathe dbl. friction CS.
No. 3 B. & S. Automatic Gear Cutter.
3½" Ajax iron bed Forg. & Upset. Mch.
72" Bullard Vert. Bor. Mill D.C.M.D.
20" American back-geared Shaper.

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Tool Holders are SLIGHTLY USED but in good condition.

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5/8	S. Shank	Left or Right.....	\$ 1.50 each
3/4	S. Shank	Left or Right.....	2.00 each
7/8	S. Shank	Left or Right.....	2.50 each
1		Left or Right.....	3.50 each
1 1/8		Left or Right.....	5.00 each

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DETROIT MICH.

PARTIAL LIST — LOW PRICES

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Model C and AB Becker Vert.	No. 13 Natco Multiple drill.
40"x36" New Haven Lathe.	10"x36" Norton & No. 70 Heald.
28" and 24" Lathes.	No. 2 B. & S. Surface Grinder.
36"x36"x10" Ohio Planer 2 hds.	8"x24" W & M Surface Grinder.
20" Steptoe Shaper, S. P. D.	No. 2 Bath Universal Grinder.
20" Libbey Turret Lathe.	Watson Stillman Hydraulic Press.

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Gibb seam welder, 440 v. 100 KVA, compl. with all necessary motors.
3' Morris fully enclosed radial drill, motor on arm.
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2—No. 3A B. & S. univ. mills, "heavy duty", direct conn. 5 H. P. motor.
No. 2 1/2 B Milwaukee vertical mill. S. P. D. 17" rotary table and vise.
20" Gould & Eberhardt back geared heavy duty shaper, vise and c/s.
16"x8" Lodge & Shipley grd, hd. q. c. g. lathe, S. P. D.; turret attach.
18"x8" Rockford "Economy" q. c. g. dble. back geared lathe, pan bed.
18"x10", 28"x12" Schumacher & B. q. c. g. dbl. bk. grd. lathe, taper att.
24"x24"x6" Gray motor driven planer.

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 —53".
 No. 5—60" BROWN & S. GEAR CUTTER.
 No. 2 and 3 CINCINNATI PLAIN MILLERS—
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 AVEY BALL BEARING DRILLS 2 & 3 spdle.
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Large complete stock 115 & 230 volt.

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1—1000 HP, C. Whl. Syn. 600 RPM.
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 1—300 HP, G. E. sq. cg. 360 RPM.
 1—250 HP, E. Mch. Syn. 1200 RPM.
 1—250 HP, Wgse. 1800 RPM.
 1—200 HP, F. M. s. rng. 1200 RPM.
 1—200 HP, Brk. s. rng. 900 RPM.
 1—150 HP, G. E. sl. rng. 1200 RPM.
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All cap., 720 KW down.

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 1—750 KW condensing.

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 1—500 KVA. E. Mch. 514 RPM.
 1—375 KVA. G. E. 225 RPM.
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KINSEY

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Rebuilt Tools**

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Schum. & B. 30"x32" QGC Eng. b. d.
Schm. & B. 24"x12" qcg.; belt drive.
Bradford 24"x12" lcg lathe; grd. fd.; c. d.
Reed 24"x12" l. c. g.; a. b. g.; belt cone dr.
Bradford 20"x8" q. c. g.; taper att.; c. d.
LeBlond 19"x10" Semi-qcg Turning bd.
LeBlond 18"x10" Late with tur.; c. d.
LeBlond 18"x8" l. c. g.; d. c. mtr. driven.
LeBlond 17"x6" Semi-qcg Turning bd.
LeBlond 17"x6" Mfg. Type; cone dr.
Bradford 16"x8" hd. q. c. g. lathe; c. d.
Willard 16"x6" Semi-qcg t. a.; c. d. dr.
Willard 13"x6" Semi-qcg t. a.; c. d.
LeBlond No. 9 Multi-cut lathe, s. p. d.
Chard 16"x8" q. c. g. Lathe; c. d.
McCabe 50"-27" dbl. spdl. d. c., m. d.

SHAPERS

26" Walcott Plain Crank; belt drive.
26" G. & E. b. g., s. p. d.
24" Cincinnati, b. g., cone drive.
24" Gould & E. b. g. V-ram; m. d.
22" Ohio, b. g., cone drive.
16" Gould & E. b. g. V-ram; m. d.
16" Barker pl. crank shaper; cone dr.
12" Smith & Mills plain crank. b. d.

MISCELLANEOUS

(2) 4 1/2" Gridley Spl. Spin. Auto; b. d.
2 1/4", 3 3/4" Gridley spl. spdl. Auto.; b. d.
Atkins No. 3 metal cutting band saw.
Racine 6"x6" cab. base saw; b. d. wet.
Racine 13"x13" hack saw, belt drive.
6"x6" Peerless H.S. Saws, b. d.
4 1/2"x4 1/2" Napier horiz. hack saw, b. d.
Fosdick No. 2-A horiz. floor type bor. mill, b. d.
Rockford 3 1/2" bar horiz bor. mill; m. d.
Rochester 3 1/2" bar horiz bor. mill; m. d.
Niles-B-P 3 1/2" bar horiz bor. mill; m. d.
King 42" vert. bor. mill; 2 hds.; m. d.
Niles 72" vert. bor. mill; 2 hds.; b. d.
Lucas 4" dia. bar horiz. boring mill, m. d.
(2) B & S No. 3 26" gear cutters; b. d.
No. 5A Lees-Bradner gr. gen. b. d.
Grand Rapids No. 4 drill grinder, m. d.
Ohio No. 3 cutter & tool grinder; b. d.
LeBlond No. 1 cut. & tool grinder; bd.
Bertsch 10"x10" Press Brake, motor dr.
American Can Co. No. 20. b. i Press b. d.
Toledo No. 3 o. b. i. Press; b. d.
Pangborn sand blast equip.; like new.
Alfred Herbert 2 1/2" gh turret lathe spdl.
J. & L. 2 spdl. turret lathe, g. hd., chuck, s. p. d.

B. & O. No. 8 turret lathe, bar, b. d.
Gisholt 21" tilted turret lathes, m. d. (2)
Gisholt No. 6 HD Turret; AC m. d.
Streit 24" Pulley Turning Lathe c. dr.
Chicago 9"x8" Air Comp.; b. d.
Bellevue No. 14 indus. furn.; oil burning.
P. & W. thread mill; 6"x48"; b. d.
Theil die filing machine, motor driven.

PLANERS

60"x60"x14" Cincinnati; 2 hds.; b. d.
55"x55"x30" Betts, spur geared 2 hds. on rail, motor drive.
36"x36"x16" Gray planer, 2 hds.; bd.
32"x32"x10" Gray planer; 2 hds.; bd.
32"x32"x14" Gray planer, 2 hds.; bd.
30"x30"x18" Gray planer, 1 hd.; bd.
26"x26"x10" Gray; 2 hds.; m. d.
26"x26"x6" American, belt drive.

MILLING MACHINES

Rockford No. 1 1/2 plain miller; p. f.; b. d.
Cincinnati Nos. 4, 3, 2 pl.; cone dr.
Becker No. 6 vertical h. d.; cone dr.
Brown & S. No. 1 Y Pl. Miller Cone Dr.
Garvin No. 12 Miller; c. d.

GRINDERS

Gardner No. 2 b. b. disc grinder; b. d.
B. & S. No. 26 plain cylindrical; b. d.
B. & S. No. 11 plain cylindrical; b. d.
No. 2 Diamond surf. grinder, motor dr.
Ott No. 8 pl. cyl. grinder; 6"x18"; b. d.
Modern 12"x24"; pl. cylindrical; b. d.
Heald No. 60 Internal Grind.; b. d.
Heald No. 72 Internal; belt drive.
Heald No. 65 Internal gr.; b. d.
Landis No. 1 1/2 universal & tool; b. d.
Landis 20"x96" Self-Contained, b. d.
Norton 6"x30" Plain Cyl.; b. d.

DRILLS, Radial & Sensitive

Bausch 8-sp. multi drill; No. 3 mt. spdl.
Fairbanks 20" stat. hd. drill; bg; pf; bd.
8-spindle Moline hole drill, cone drive.
3 1/2" Cinti-Bick RC radial, d. c., m. d.
Cinti-Bick 3" radial dr.; d. c. with mtr.
Mueller 4" radial, extend. column, s. p. d.
Fosdick 5" box column radial, s. p. d.
Colburn No. 2 hi duty; t. & l. pul. dr.
Baker No. 3 10 hvy. duty, belt driven.
Foote-Burt hd. prod. 4-spin. drill; pf.
Foote-Burt No. 25 h. d.; sgl. pul. dr.
Foote-Burt 4-spindle rail type; b. d.
Barnes camel back 2-spindle; belt dr.
Barnes 3-spindle 20"; p. f.; belt dr.
Avey No. 3 b. b. sens. drill; m. d.
Avey No. 1/2 high speed 6-sp. drill; b. d.

THE E. A. KINSEY CO.

333 West Fourth St.,

Est. 1886

Cincinnati, O.

Index of Advertisers

Aaron Machinery Co.	169	Delta Mfg. Co.	99
Abart Gear & Machine Co.	141	Desmond-Stephen Mfg. Co.	140
Abbott Tool & Equipment Co.	179	DeWitt Tool Co.	190
Acme Industrial Co.	105	Dreis & Krump Manufacturing Company	Inside Back Cover
American Hollow Boring Co.	135	Dumore Company.	106
American Tool Works, Inc.			
Ames Co., B. C.	141	Eastern Machinery Co.	182-183
Anderson Bros. Mfg. Co.	36, 153	Emerman, Louis E.	208
Apex Machine Co.		Eisler Engineering Co., Inc.	146
Armgo Company	126	Errington Mechanical Laboratory	100
Armstrong-Blum Mfg. Co.		Essex Brass Corp.	145
	Inside Front Cover	Esley Machinery Co., E. L.	204
Armstrong-Bray & Co.	140	Etico Tool Co.	102
Armstrong Bros. Tool Co.	51		
Atlas Press Co.	127	Failor-Strafer Machinery Co.	171
Automatic Gas Steam Radiator Co.	28	Falk Mill Supply Co., Inc.	196
		Faulk, F. R.	130
Baldor Electric Co.	95	Federal Press Co.	57
Banner Mfg. Co.	75	Federal Products Corp.	18
Baumbach Mfg. Co., E. A.	118	Flexo Machines	214
Belyea Company	177	Flynn Manufacturing Co.	
Bennett-Rafkin Machinery Co.	195	Ford Mfg. Co., M. A.	27
Bernstein & Co., Geo. M.	196	Foster Machinery Co.	177
Beverly Throatless Shear Co.	146	Four Grip Tool Co.	22
Bleser Mfg. & Mchy. Co.	169		
Botwinik Brothers	186	Galland-Henning Mfg. Co.	33
Bradley Machinery Co.	204	Gallmeyer & Livingston Co.	5
Brandt Machinery Sales	178	General Blower Co.	169
Breuer Electric Co.	91	George, James W.	203
Brewster Company, Inc.	137	Gits Bros. Mfg. Co.	44
Brown Machinery Co.	174	Goldman, Harvey H.	191
Brown & Sharpe Mfg. Co.	71	Goldsner Machinery Co.	178
Brownell Machinery Co.	169	Graham Manufacturing Co.	133
Buffalo Forge Co.	12-13	Grant Mfg. & Machine Co.	118
Burke Machine Tool Co.		Greene, Tweed & Co.	117
Burns Machinery Co., F. W.	184	Greenerd Arbor Press Co.	168
Burr & Son, J. T.	138	Grobet File Corporation	144
		Grob Brothers	
Carlson Mfg. Co., C. H.	142	Hamilton Tool Co.	138
Carroll Mfg. Co., L. W.	142	Hammond Machinery Builders	11
Carroll & Son, Wm.	136	Hardinge Brothers, Inc.	6-7
Chicago Dial Indicator Co.	63	Hartford Special Machinery Co.	167
Chicago Electric Co.	209	Harvey Mfg. Co.	124
Chicago Rawhide Mfg. Co.	151	Haskins Co., R. G.	16-21
Chicago Rivet & Machine Co.	29	Hassal John, Incorporated	159
Chicago Wheel & Mfg. Co.	108-109	Henderson & Kaye	30
Cincinnati Mchy. & Supply Co.	180	High Speed Hammer Co.	213
Cleereman Machine Tool Co.	81	Hill-Clarke Machinery Co.	185
Clements Mfg. Co.		Hobart Bros.	110
Clinton Machinery Co.	208	Hotel Gibson	149
Colonial Bushings Co.	96		
Commercial Centerless Grinding Co.	138	Howarth Machinery Co., C. C.	199
Continental Mch. Specialties, Inc.	37	Hyman & Son, Joseph	177
Conway Clutch Co.	19		
Craley Mfg. Co.	124	Illinois Testing Laboratories, Inc.	155
Cullman Wheel Co.	Back Cover	Indianapolis Machinery & Supply Co.	
		Industrial Centerless Grinding Co.	120
Davis Machinery Co.	176	International Machinery Co.	176
Dayton Rogers Mfg. Co.	136	Industrial Machinery Co.	206
Delta Equipment Co.	206	Interstate Machinery Co.	147, 188
		Iroquois Machinery Co.	204

Index of Advertisers—Continued

Janette Mfg. Co.	130	Parsons-Merritt Co.	
Johnson & Sons Mch. Co., Wm. C.	181	Pier Equipment Co.	39
Johnson Tool Co.	136	Plunket Machine Co.	130
Jones & Lamson Machine Co.	10	Porter Machine Co.	134
Jones Mch. Tool Co. Cincinnati	198	Pratt & Whitney	32
Jones Machinery Co.	178	Precision Tool Co.	65
Kinsey Co., E. A.	210	Printz Electric Co.	128
Klauber Machinery Co.	179	Procurier Safety Chuck Co.	69
Koch Test Indicator	144	Production Machine Co.	133
L-W Chuck Co.	107	Progressive Tool & Cutter Co.	79
Lafayette Tool Co.	194	Pruitt Machinery Co.	178
Lang Machinery Co.	171	Putnam Tool Co.	23
Laubert Co.	165	Pyrometer Instrument Co.	168
Lewthwaite Machine Co., T. H.	163		
Libert Machine Co.		R & L Tools	8-9
Lincoln Electric Co.	24	Racine Tool & Machine Co.	35
Linley Bros. Co.	132	Rasmussen Machine Co.	145
Littell Machine Co., F. J.	73	Reich Mfg. Co., J. R.	144
Lovejoy Flexible Coupling Co.	134	Reliance Machinery Sales Co.	179
Lucas & Son, J. L.	205	Rickert Shafer Co.	126
Luma Electric Equipment Co.	132	Ridge Tool Co.	131
		Rigid Tool Holder Co.	143
M-B Products	143	Rivett Lathe & Grinder, Inc.	4
McDonald Machinery Co.	187	Robbins Engineering Co.	89
McMahon Co., Frank	165	Rockford Drilling Machine Co.	55
Machinery Dealers, Inc.	192	Rockford Iron Works	53
Mail Tool Company	40	Rogers Mfg. Co., Dayton	136
Mart-Galbreath Machinery Co.		Rosenfeld Mch. Corp.	169
	172-173	Rosenkranz, Weinbecker & Co.	207
Marshalltown Mfg. Co.	111	Ross Co., David J.	59
Martin Tool & Die Works, J. E.	135	Ross Operating Valve Co.	20
Master Machine & Tool Co.	114	Rotary File Co.	128
Mestlan, A. R. & J. E.	165	Rotor Air Tool Co.	31
Midwest Equipment Co.	200	Royersford Foundry & Machine Co.	67
Midwest Tool & Engineering Co.	146		
Miles Machinery Co.	193	Russell Boring Bar Co.	165
Modern Machine Corp.	138	Russell Machine Co.	207
Modern Machine Tool Co.	87	Ruthman Machinery Co.	161
Moorhouse, Frank K.	208		
Morey Machinery Co., Inc.	169	Schauer Machine Co.	139
Morrison Machine Products, Inc.		Scherr Co., George	122
	Front Cover	Schmidt, Geo. T., Inc.	85
Motor Repair & Mfg. Co.	200	Scott-Bansbach Machinery Co.	
Moyer, J. N.	200		170-171
		Scully-Jones & Co.	42-206
National Aluminum Co.	116	Segal Machinery Co.	199
National Machine Tool Co.	137	Seneca Falls Machine Co.	140
Nicholson & Co., W. H.	125	Service Co.	173
Nielsen, Inc.	155-159	Sheldon Machine Co.	
Norgren Co., C. A.		Simmons Machine Tool Corp.	194
Norton-Broadway Machinery Co.	207	Skilaw, Inc.	49
Numberall Stamp & Tool Co.	134	South Bend Lathe Works	115
		Speedway Mfg. Co.	
O'Brien Machinery Co.	173	Stackbin Corp.	119
Odin Universal Corp.	47	Standard Electrical Tool Co.	122
Oliver Instrument Co.	34	Standard Machinery Co.	176
Oliver Machinery Co.		Standard Pressed Steel Co.	104
Oliver Motorcraft Corp.	163	Standard Shop Equipment Co.	120
Onarud Machine Works	136	Stanley Works	93
Osborne & Sexton Mch. Co.	201	Star Machine & Engineering Co.	149
Ott Machinery Sales, Inc.	176	Steege Machinery Co., W. L.	

Index of Advertisers—Continued

Sterling Factory Equipment Co.	103	Vinco Mfg. Co.	38
Strand & Co., N. A.	15	Vinco Tool Co.	98
Strippit Corporation	134	Vine, R. A.	200
Strong, Carlisle & Hammond Co.	205	Vonnegut Moulder Corp.	41
Sun Machinery Co.	199	Wain Machinery Sales, Chas. E.	179
Super Speed Press Corp.	25	Walls Sales Corporation	167
Surplus Material & Machinery Co.	174	Walton Co.	161
Super Tool Co.		Wardwell Manufacturing Co.	157
Surplus Stock & Mch. Co., Inc.	206	Weldon Tool Co.	3
Sutton Tool Co.	83	Wells Manufacturing Corp.	43
Tannewitz Works	142	Wertman Machinery Co.	173
Taylor Machine Co.	147	Western Machine Tool Works	61
Temco Electric Motor Co.	142	Western Tool & Mfg. Co.	168
Titan Tool Co.	101	West Penn Machinery Co.	175
Toledo Machinery Exchange	208	White Dental Mfg. Co., S. S.	97
Tomkins-Johnson Co.	14	White Machinery Co., A. D.	203
Triplex Screw Co.	123	Whitney Metal Tool Co.	17
United Machinery & Supply Co.	178	Wigglesworth Mach. (Cleveland)	174
United Precision Products Co.	26	Wigglesworth Machinery Co.	178
Universal Engineering Corp.	139-153	Wilson, K. R.	129
Used and Rebuilt Machinery	169-210	Witek Manufacturing Co.	77
Vacuum Cup Metal Pulley Co.	144	Wodack Electric Tool Corp.	
Valley Electric Corp.	157	Wyzenbeek & Staff.	121
Victor Machinery Co.	201	Yohe Supply Co., Wm. S.	168
Victor Machinery Exchange	197	Yost Mfg. Co.	146
		Ziegler Tool Co.	116

BRUNO SLOTTING ATTACHMENT \$25.00 Increases Shaper Usefulness

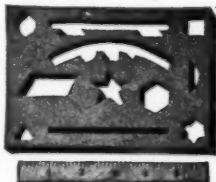


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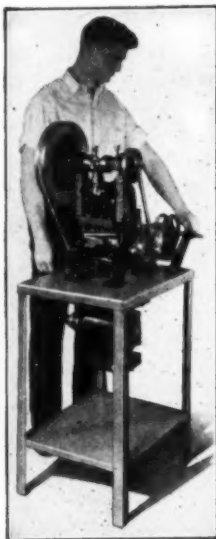
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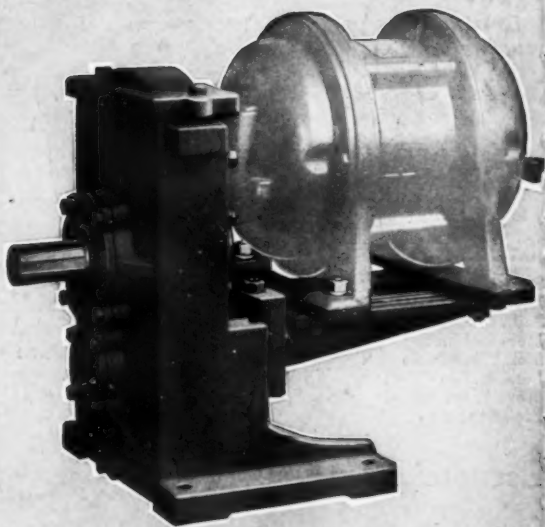
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